910.5
S57

PUBLICATIONS OF THE SIERRA CLUB

No. 49

SIERRA CLUB BULLETIN

Vol. IX No. 3

JANUARY, 1914

SAN FRANCISCO, CALIFORNIA

1914

SIERRA CLUB BULLETIN

FOUNDED 1892

Edited for the Club by

WILLIAM FREDERIC BADÈ

JANUARY, 1914

Vol. IX No. 3

CONTENTS

TEHIPITE VALLEY ..... *John Muir* 125

SCRAMBLES ABOUT YOSEMITE ..... *Joseph N. Le Conte* 126
Plates XLIX, L, LI, LII, LIII, LIV, LV, LVI, LVII, LVIII.

SKETCH MAP OF TENAYA CAÑON 134

STUDYING THE YOSEMITE PROBLEM ... *F. E. Matthes* 136

THROUGH THE OLYMPICS WITH THE MOUNTAINEERS ..... *Marion Randall Parsons* 149
Plates LIX, LX, LXI, LXII, LXIII, LXIV, LXV, LXVI.

THE 1913 OUTING TO THE KINGS RIVER CAÑON ..... *Lena Redington* 159
Plates LXVII, LXVIII, LXIX, LXX, LXXI, LXXII, LXXIII, LXXIV.

FIRST ACROSS THE SIERRA NEVADA ... *Willis Linn Jepson* 165

MUIR LODGE IN THE SIERRA MADRE MOUNTAINS ..... *A. Martha Walker* 170
Plates LXXV, LXXVI.

ORGANIZATION OF THE SIERRA CLUB 173

EDITORIALS 174

REPORTS 179

NOTES AND CORRESPONDENCE 183
Plates LXXVIII, LXXIX, LXXX.

IN MEMORIAM 184
Plate LXXVII.

NATIONAL PARKS 206

FORESTRY NOTES 209

BOOK REVIEWS 212

All communications intended for publication by the SIERRA CLUB, and all correspondence concerning such publication, should be addressed to the Editor, WM. F. BADÈ, Room 402 Mills Building, San Francisco, California.

Photographs submitted should be unmounted and separate from manuscript. Reprints of articles are printed only at the request and expense of the author.

Correspondence concerning the distribution and sale of the publications of the Club with reference to advertising rates and space location, and concerning its business generally, should be addressed to the Secretary of the Sierra Club, Room 402 Mills Building, San Francisco, California.

This publication for sale at 402 Mills Building, San Francisco, and at Dawson's Book Shop, 518 South Hill Street, Los Angeles, also at De Witt & Snelling, 9 Telegraph Avenue, Oakland.

Price, 50 cents per copy.

Photogravure From Photograph by Herbert W. Gleason John Andrew & Son

TEHIPITE VALLEY, MIDDLE FORK OF KING'S RIVER.

SIERRA CLUB BULLETIN

VOL. IX SAN FRANCISCO, JANUARY, 1914 NO. 3

TEHIPITE VALLEY

BY JOHN MUIR

Tehipite Valley on the middle fork of Kings River is about three miles long, half a mile wide, and the walls are from 3,500 to nearly 4,000 feet in height. The level floor is planted with oaks and pines, libocedrus, etc., forming charming flowery groves like those of Hetch Hetchy and Yosemite, enclosed by majestic granite walls which in height and beauty and variety of architecture are hardly surpassed by any other Yosemite in the Sierra. Several small cascades coming from a great height sing and shine among the intricate architecture of the south wall, one of which, when seen in front, seems to be a nearly continuous fall about 2,000 feet high. But the grand fall of the valley is on the north side, made by Crown Creek, a stream about the size of Yosemite Creek. This is the Tehipite Fall, about 1,800 feet high. The upper portion is interrupted by dashing cascades but the last plunge is made over a sheer precipice about 400 feet in height into a beautiful pool in a recess of the valley floor. To the eastward of the fall is the great Tehipite Dome, a gigantic round-topped tower about 3,600 feet in height, the most striking and wonderful feature of the valley, and one of the most wonderful of all the famous domes of the Sierra.

TEHIPITE VALLEY, MIDDLE FORK OF KINGS RIVER.

SCRAMBLES ABOUT YOSEMITE

By Joseph N. Le Conte

During the summer of 1912 I had the pleasure of camping, with a party of friends, for five weeks in the Yosemite Valley. I know of no other place in the Sierra so well suited for a permanent camp. It is easy of access, and is a point to which supplies and camp equipment are easily and quickly sent. By spending a little time in searching, it is easy to get a camp-ground fairly well removed from the more crowded portions of the valley, and certainly no more beautiful spot can be found in the whole length and breadth of the Sierra Nevada.

It is claimed by some that Yosemite is so overcrowded as to make camp life disagreeable, and that climbs in and about the valley are tame as compared with other portions of the Sierra, especially the higher portions. In answer to the first, I can only say that those who make this complaint must insist on keeping in the dusty roads and streets; whereas by striking off in almost any direction, one can in a very few minutes get into as wild a region as can be found anywhere. As an answer to the second, I hope the following notes will suffice.

We reached the Yosemite on the 25th of June, and joined the party already established in the beautiful little camp on the south bank of the Merced just below the Stoneman Bridge. For the first few days we visited the old points of interest—Glacier Point, Vernal and Nevada Falls, Yosemite Falls, and many others, both to renew old acquaintances, and to break in new shoes. On July 6th a small party, consisting of Mr. and Mrs. Jas. Hutchinson, Miss Taggard and myself, took a seven-day trip by way of Lake Merced to the Tuolumne Meadows, returning by way of Lake Tenaya to Yosemite Camp.

Shortly after this Mr. Hutchinson and I made plans for a trip up the Tenaya Cañon. I had heard and read of the wonders of a trip through this gigantic gorge, and decided not to let another summer pass without taking a peep into it. I had

VIEW DOWN TENAYA CAÑON FROM TOP OF UPPER FALL.
Photo by J. N. Le Conte.

VIEW DOWN OVER THE LOWER PART OF TENAYA CAÑON, SHOWING ROUTE ALONG LEDGE.
Photo by J. N. Le Conte.

often heard Mr. Muir describe his trip through it in the early days, had heard Chas. Bailey relate his experiences, and had read the accounts of Corbett and Gibbs, who went through in 1894, and of Foster, who made it in 1909. As all these except Mr. Muir had come down the gorge, Hutchinson and I decided to make a trial in the reverse direction. So plans were laid for a start on the evening of July 19th.

The Tenaya is one of the grandest cañons of the Sierra. It heads just south of Lake Tenaya, and trends southwesterly to the upper end of Yosemite Valley. In general, its cross-section is U-shaped, a typical glacial cañon. For several miles of its length it is between 4,000 and 5,000 feet deep. The highest slope is on the east, where the tremendous masses of Half Dome and Clouds Rest form the wall. Perhaps the deepest part is just below the crest of Clouds Rest, where there is an unbroken slope of polished granite fully 5,000 feet in vertical height on the east, while on the west the domes of Mt. Watkins tower 4,000 feet above the stream. Just here the creek has cut a box cañon in the bed of the great polished glacial trough, and the smooth slopes on either side approach the edges of this at so high an angle that it is very difficult to pass around the gorge. Above and below the box cañon the great gorge is choked with boulders and brush, rough but not dangerous; but again at the very head of the cañon there is a fall or slide over the polished granite some 500 feet high, which furnishes an interesting problem for the climber.

Hutchinson and I packed our knapsacks on the afternoon of the 19th. We took food for two or three days, for it was not possible to tell how long we might be trapped in the cañon. We took a small camera, two empty tin cans for cooking, and, most important of all, a pair of rubber-soled tennis shoes, or "sneakers," for polished granite. We also took our sleeping-bags as far as the first night's camp. That evening we took dinner with the main party, and about 6:30 P. M. "hiked" out up the road to Mirror Lake, and then along the fine new trail to the foot of the steep zig-zags which have recently been built up to the top of the wall opposite Half Dome. Here we left the trail and camped in a beautiful spot on the banks of Tenaya Creek.

It is needless to say we were up early. With the unknown troubles ahead, I for one did not need an alarm clock, but was awake hours before the appointed time of 4 A. M. After a hasty breakfast of mush, coffee, and bread, we repacked our knapsacks, hid our sleeping-bags amongst the rocks near the trail, and long before sunrise struck out up the cañon.

For the first half-mile we followed a footpath which leads to the base of Snow Creek Falls. After crossing this tributary, there is no trail or track of any kind except an occasional bear trail. The next mile along the base of Mt. Watkins is savagely rough. Gigantic rock masses, fallen from Mt. Watkins and the Clouds Rest ridge, choke the cañon, while between these there is a dense growth of scrub oak timber, and higher up the slopes almost impenetrable brush. This, while probably the roughest part of the cañon, presents no element of danger whatever. We covered the distance in about an hour.

Toward the upper end the cañon bottom opens out into a small flat, fairly free of brush. Here, stretching directly across the cañon, is a continuous wall of cliffs from three to five hundred feet in height, through which the creek cuts in a vertical walled gorge. This is the entrance to the inner or box cañon of Tenaya Creek, the passage of which is one of the only two serious obstacles in the cañon. This transverse wall is pretty well broken to the east or right of the inner gorge, where brush and small trees grow in breaks of the rock. From below, it seemed possible to ascend this right wall to the brushy slope above, and thus avoid the inner gorge entirely. This might require considerable time, as the way looked by no means easy, and time would be needed to search out a passable route.

We decided to try the bottom of the inner gorge. Its ragged portal looked most inviting, and we certainly would not give it up without a trial. The creek was fortunately very low. We made our way into the gloomy chasm by walking most of the time in the water, for even at this season there was little space on the sides. So jumping from boulder to boulder, or wading, we progressed without trouble for perhaps a quarter of a mile. The gorge was very narrow, sometimes not over thirty feet wide. The first difficulty was encountered where the creek

LOOKING DOWN THROUGH LOWER ENTRANCE TO BOX CAÑON.
Photo by J. N. Le Conte.

THE FALL IN THE BOX CAÑON, SHOWING WEDGED BOULDER.
Photo by J. N. Le Conte.

plunges over a fall, or rather over two falls, with a small pool about ten feet in diameter on a shelf between. Below the lower fall there is another and larger pool, into which the cliffs come down vertically on both sides. At first there seemed to be no possible way of passing it. For a long time we sat at its base and examined the front polished by falling water. Then we tried to climb out of the gorge on the west side, thinking to get around, and either descend into the gorge again or avoid it entirely. By the hardest kind of work, clinging to the cliffs and crawling through stubborn oak chaparral, we did succeed in reaching the top of the wall, only to find that it was impossible to proceed along the edge of the gorge. Discouraged, we returned to the creek, after wasting upwards of an hour's time, and several hundred feet of rough climbing. We again faced the fall, and after some more study, Hutchinson suggested that we might crawl along a sloping ledge along the left cliff a few feet above the lower pool, and then climb up beside the lower fall to the pool between the two. This we proceeded to do, and by careful crawling on hands and knees, the lower pool was passed, after which it was easy for us both to reach the foot of the upper fall. This latter could not be climbed on the left side, but by crossing the foaming stream at the lip of the lower fall, it was possible to continue up the east or right side, and thus the first difficulty was overcome.

The gorge now widened somewhat, and was choked with huge boulders, some so large as to make climbing around them troublesome. The eastern side now broke down, and a steep chute, the track of innumerable avalanches, broke through, offering a means of escape to the slopes below Clouds Rest. Just above this the gorge closed in again, and we entered a second portal, walking in the stream between vertical cliffs which must have been 250 feet high. The way was perfectly clear up to a second and higher fall, which completely blocked the cañon.

This fall was a most unusual one. An immense boulder, some thirty feet in diameter, had evidently rolled down one side of the main cañon, dropped into the inner gorge and plugged its bottom like a wedge. The creek had gradually filled in behind it, and now made a fine fall over it. At the

base of the fall was a deep, clear pool, and glassy cliffs came down to the water's edge on both sides. It seemed impossible to reach the base of the fall without swimming the pool, which we would have done had there been any chance of getting up past the fall, but there did not appear to be any foothold on the polished rocks on either side, though with the aid of a rope it would have been possible to descend the east side. From the place where we stood we could look past the fall and up the gorge to where tall trees were growing, and the brushy slopes of the great outer cañon could be seen. I am quite sure that could we have passed the fall, a few hundred yards would have brought us to the end of the gorge.

We did not waste much time here. There was no choice but to retreat to the chute below and climb out on the Clouds Rest slope. Here, just at the edge of the inner gorge, there is a large patch of brush crossed by avalanche chutes. Our plan was to follow along this, keeping close to the edge of the inner gorge, and thus reach its upper entrance, whence the portion above the last fall, or "jumping-off place," could be explored. This soon proved to be difficult, if not impossible. Smooth, polished slopes were encountered, along which one could not pass without danger of sliding off into the inner gorge. There was nothing to do but to climb higher and higher along the edge of the brush patch, and seek a passable ledge. Again and again we tried to work along the slope, but without success. Deer tracks still led upwards, and these we followed till finally the passage was found along a ledge about 600 feet up the slope of Clouds Rest. From this ledge a most stupendous view can be obtained. Upward, the barren rock, polished by centuries of sliding rocks and snow avalanches, reaches up 4,000 feet overhead, while below a shorter, though even more awful-looking slope drops off to the eaves of the inner chasm. Up and down the cañon the view is unobstructed, and is simply overpowering in its immensity.

We followed the ledge past the upper end of the inner gorge, now descending slightly along the slope. Deer tracks gave us confidence of final success, for undoubtedly this is one of the main passages used by wild animals. The ledge finally gave out on the slope about 500 feet above the talus,

UPPER END OF TENAYA CAÑON, SHOWING ROUTE PAST UPPER FALL.
Photo by J. H. Hutchinson.

ASCENDING THE EAST SLOPE OF TENAYA CAÑON.
Photo by J. N. Le Conte.

and some half-mile beyond the upper end of the gorge. Here was the first chance to use our sneakers, so hob-nailed boots were taken off, and by using hands and feet for friction duty, we worked carefully down to the talus at last.

The day was now so far advanced that we gave up our plan to visit the upper end of the gorge, and so pushed right on up the bed of the cañon, through brush and boulders, to the foot of the great fall which blocks the upper end, and there, under the shadow of a huge talus fragment, we stopped for lunch.

This fall, though some 500 feet high, is not vertical, but slides down the bare rock face of the eastern wall. Directly at the head of the main cañon is a rounded dome about 1,500 feet high, the fall being to the right of the dome. To the left of the dome a rugged gulch filled with brush furnishes a possible means of leaving the cañon, and reaching the Tenaya trail 2,000 feet above.

The passage of this fall is one of the most interesting problems of the trip. Corbett and Gibbs, with the aid of their rope, worked down the rock slope along the northern edge of the fall. This is certainly dangerous, and seems almost impossible to accomplish from below. Foster found a better way by ascending the Clouds Rest slope about a quarter of a mile below the fall and climbing over the low dome which guards it on the southeast, thence descending slightly to the valley at its head. This latter way we chose. At one place a long point of brush runs up the rock face. From the upper end of this the smooth front of the cañon wall must be negotiated, and this in some places approaches a forty-five-degree angle. After lunch we tackled it with our rubber-soled tennis shoes. The brush was so dense that at first we made better progress by walking on the rock alongside of it, getting assistance from the dense overhanging branches. At the upper end of the brush we had to cut loose, and walk straight up the steep rock. About 500 feet of this brought us to another patch of talus and brush, after reaching which there was no further trouble. This field of talus leads to the right of the small dome, and rises about 600 feet in vertical height. On the shoulder of the dome is a huge glacial erratic, from which a

superb view can be obtained, both down the gigantic gorge into the far-away blue depths of Yosemite Valley and up the beautiful little tree-filled glacial basin above. After resting some time here, we descended into the glacial basin, and went on to its upper end for camp. We could have made it on to Lake Tenaya before dark, but found a good place in a grove of firs and decided to call it a day's work, and though we had come only about five and a half miles and risen 3,000 feet, it had taken us thirteen hours to do it. So we cooked supper, such as it was, and slept, or rather tried to sleep, "bedless" near a fire till daylight.

Above this little flat or basin there is no trouble whatever. At its upper end the stream comes down a polished rock slope at an angle of about twenty degrees for a third of a mile. There are several large pot-holes in the stream bed, some as much as fifteen feet in diameter. Above the head of this slide the stream flows through a shallow gulch, and soon the meadows below Lake Tenaya are encountered. Here we picked up the well-beaten trail at 6:30 A. M. and started back toward the Valley at once. At one place on the Mt. Watkins ridge the trail passes along the rim of the Tenaya Cañon, and one may see at a glance the whole upper end of the wonderful gorge. There directly below is the great fall at its head, the steep rock face up which one climbs to get around it, the wilderness of boulders and brush which chokes the bottom, the upper entrance to that savage inner gorge, and towering to the very sky directly across, is the unbroken 5,000-foot face of Clouds Rest. One can even distinguish the tiny ledge along which we had passed to get around the inner gorge. A mere thread it seems against that wall.

We hurried on down to Snow Creek, picked up our sleeping-bags where we had left them, and pulled into camp shortly after noon.

In regard to the cañon as a whole, it may be said that there are only two places at which special care is necessary—one the passage of the inner gorge and the other the passage of the fall at the head of the main cañon. At times of low water, at least with water as low as in July, 1912, I think there is no question but what one could go the entire distance down the

POT HOLES IN CREEK BED, UPPER TENAYA CAÑON.
Photo by J. H. Hutchinson.

LOOKING DOWN FROM GROUSE VALLEY.

Photo by W. L. Huber.

bottom of the gorge, using a rope to get over the one bad place at the upper fall. This, however, would involve swimming the pool at its foot. It seems very difficult to get up past this fall without the aid of a rope previously fixed from above, so even at times of low water the complete passage of the inner gorge in this direction is, to say the least, a difficult undertaking. Its upper end may be avoided by climbing out and along the ledge on the east, or, as Foster seems to have done, by passing around a ledge to the west. As I have said, the gorge can be avoided entirely by ascending the transverse parapet at the lower entrance and keeping on the slopes of Clouds Rest all the way. Needless to say, this is the only way at times of high water. The other difficulty at the great upper fall is really not a difficulty at all if one follows, as we did, Foster's route, and uses rubber-soled shoes. In passing through the cañon, unless one has been through it before, much time will be lost in hunting a route. Knowing exactly how to go, it would be easy to make it clear through from Snow Creek to Lake Tenaya in a day, and down in even less time.

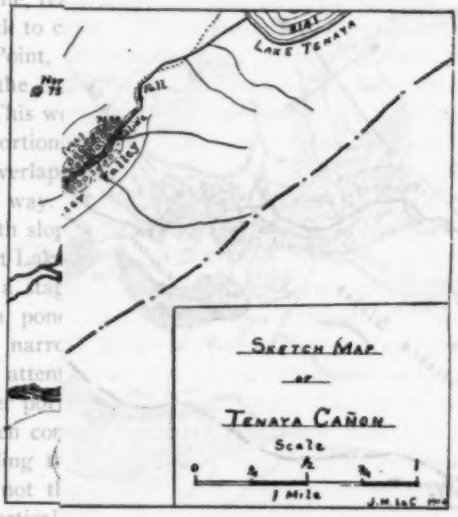
After loafing about camp a few days, Hutchinson and I decided to take one more good climb before returning to civilization. We chose the ridge south of Half Dome as one which promised an interesting climb, as well as one which would furnish unique views of the Valley. On the morning of July 26th we got off at six o'clock, taking nothing but lunch. We went up the Vernal Fall trail to the place where the footpath to Sierra Point turns off, and then up this latter to the base of the western precipice of Grizzly Point. Here the trail turns to the right around the base of Grizzly Point toward the Merced Cañon. We worked off to the left and soon reached a rugged chimney or chute which divides Grizzly Point from the massive buttress of Half Dome. From the Valley floor, a thousand feet below, this looked easy to negotiate, but closer acquaintance proved this to be far from true. To go up this chute to the saddle north of Grizzly is no easy task. It is straight rock-climbing all the way. In one place we went up under a huge flat slab of granite for twenty feet. By zigzagging back and forth across the chute, we finally

reached the saddle 2,000 feet above the Valley floor. To the south stood the spire of Grizzly Point, still 200 feet higher, so we made toward it, and reached the summit without further trouble. This last part is marked by monuments placed, I think, by Chas. A. Bailey about 1890. On the summit is a Sierra Club register box left by Mr. Bailey about 1895, but the cover was gone and no record or paper was in it.

We descended again to the saddle in the main ridge, and started north along the great spur, or "hog-back," which joins Half Dome. The traveling was easy enough, only a long pull through sandy soil and scattered brush. A magnificent panorama opened out from this unusual point of view, and it became finer and finer as we approached the gigantic wall of Half Dome. Just where the ridge abuts against the vertical face of the Dome, its eastern side is formed by a long, smooth slope of granite, the western being a sheer precipice 3,500 feet high. I had often looked at this from Glacier Point, and longed to crawl up this clean slope, and, holding on to the sharply fractured edge, look down upon Mirror Lake almost vertically below. As we approached this granite slope, it proved to be too steep to crawl up, but by working along a ledge or crack for nearly a hundred yards we came to a place where our hopes were realized. We crawled up the rock, grasped the thin edge, and looked down upon the cañon two thirds of a mile below.

Never have I seen such a frightful precipice in all my experience. The edge which my hands grasped was not more than a few inches thick, and below there was nothing, absolutely nothing, but air down for 3,500 feet. Even the upper part of the cliff could not be seen, for evidently the rock upon which we were lying overhung the abyss. The sight was too airy to be endured very long, so we crawled back and along the ridge farther, right up against the side of the great Dome. Here, looking back, we could see in profile the rock upon which we had been lying. It was not more than a foot or two thick, and overhung six or seven feet. To anyone who wants the experience of looking over a first-class precipice, without being caged in by gas-pipe railings, I can recommend this place above all others.

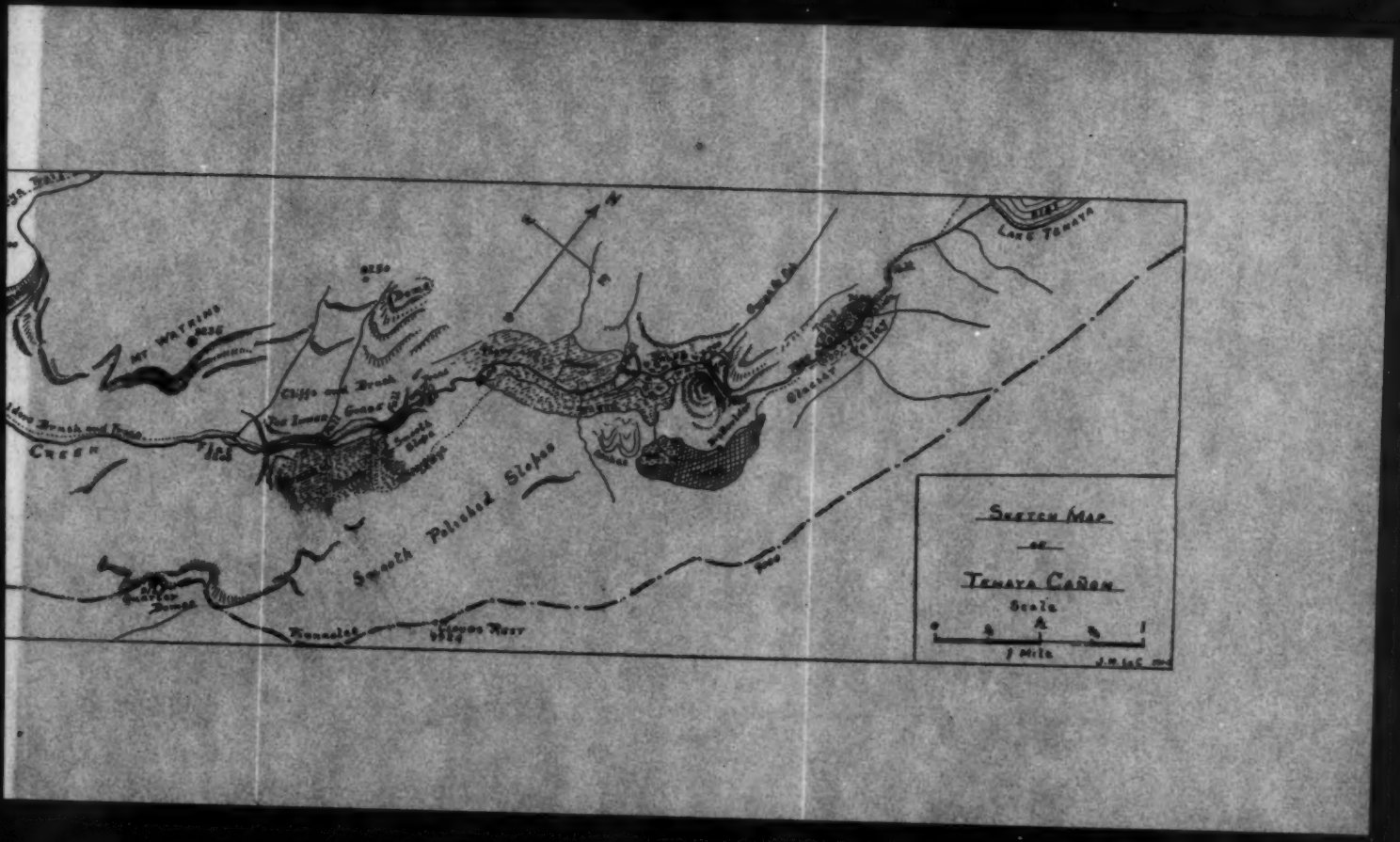
The view up Tenaya Cañon was very impressive also, though partly obstructed by the northern spur of the Dome, which throws a point out toward the west. The Dome itself was simply overpowering in its grandeur. We were level with a point about half-way up the great front precipice; a thousand feet of it rose above and a thousand feet were below, down to



and were headed for home and a solid dinner.

These are only two of the many interesting and unusual climbs about Yosemite, but there are many others which we have "staked out," and hope to investigate in the near future.

Mt WATKINS
TOOLONGA
CREEK
HALF DOME


Lake Tenaya
Mt. Watkins
Cliffs and Brush
Creek
Smooth Polished Slopes
Sketch Map
of
Tenaya Cañon
Scale
1 Mile

The view up Tenaya Cañon was very impressive also, though partly obstructed by the northern spur of the Dome, which throws a point out toward the west. The Dome itself was simply overpowering in its grandeur. We were level with a point about half-way up the great front precipice; a thousand feet of it rose above and a thousand feet were below, down to the ragged rock slope which drops off still three thousand more to the lake. Off to the east we could look over the domes of the Little Yosemite and toward the head of the Merced, while far below were the Cap of Liberty and Mt. Broderick.

In returning, we decided to go around the eastern base of the Half Dome, reach the Little Yosemite, and take the Vernal Fall trail back to camp. This seemed easy, but, like the chute at Grizzly Point, disappointed us. A great portion of the slope below the Dome on the southeast is covered with dense chaparral. This would not be so bad if it were not for smooth, impassable portions of the Dome itself, which are formed of thick slabs overlapping like giant shingles and which continually bar the way. After hours of fighting brush, crawling around smooth slopes, and climbing down rock faces, we came at last to Lost Lake on the northern side of the Cap of Liberty. This lake is a stagnant pool about a quarter of a mile long, covered with pond lilies. As we approached the Cap of Liberty, the narrow gorge between it and Mt. Broderick attracted our attention, so without hesitation we started down it. The upper portion is filled with huge talus, rough but not difficult. Then comes a remarkable meadow, several hundred feet long, filling the entire gorge from wall to wall, here in some places not thirty feet apart. The pure white granite cliffs come vertically down into the meadow grass without as much as a pebble in the corner. Below this the little stream plunges down into a rugged boulder-filled gorge. Some care has to be taken in getting down over the rock faces polished by running water. It ends near the site of the old Snow Hotel, and at 4:30 we reached the bridge over the Diamond Cascade, and were headed for home and a solid dinner.

These are only two of the many interesting and unusual climbs about Yosemite, but there are many others which we have "staked out," and hope to investigate in the near future.

STUDYING THE YOSEMITE PROBLEM*

By F. E. MATTHES, United States Geological Survey

Some of the readers of this magazine, upon learning that the geology of the Yosemite region has been given a careful investigation by a party of government scientists during the past summer, will probably exclaim: "What, again? Has not the Yosemite region been studied by geologists several times before, and do we not know all there is to know about it by this time?"

Indeed, we do not know all there is to know about it. Last summer's investigations have revealed—if nothing else—how imperfect still is our understanding of the much-admired Yosemite Valley and how great the difficulty of penetrating deeper into its mysteries. The Yosemite problem has been studied more than once in the past; it is being studied now, and it undoubtedly will bear further study in the future.

But in the meanwhile headway is constantly being made towards its solution. Each new investigator comes to the task better prepared than his predecessors—better prepared because in the possession of the cumulated knowledge, so to speak, of those who went before, and, in addition, of that advanced knowledge that is his by virtue of the general progress made by science. All these advantages last year's party enjoyed also, but besides, there was a feature of its equipment that seemed to give it special promise of success, namely the possession of an accurate large-scale map of the Yosemite region.

The unraveling of a complex problem such as that of the Yosemite Valley naturally demands the very detailed, concentrated study of certain localities, and work of that sort cannot well be executed without the aid of a topographic map of commensurate detailedness. Until a few years ago, when the United States Geological Survey published its "Map of the Yosemite Valley" on a special scale of 2,000 feet to the inch (a scale about five times as large as that used for the mapping of most of the Sierra country), such cartographic material was not available. In general it may be said that what

*Published with permission of the Director of the U. S. Geological Survey.

distinguished last summer's work from the earlier investigations was its exceedingly detailed nature. For the most part it was restricted to a small area—the Yosemite region properly speaking—and it was extended to outlying districts in the High Sierra only in so far as the character of the Yosemite problem necessitated.

But why, the reader may ask, was this research into the Yosemite problem undertaken at this particular time? Much has been written, as we all know, upon the subject of the probable origin of the Yosemite Valley. The different views advanced, however, are so widely at variance with each other, that the intelligently interested layman who would endeavor to inform himself as to the real nature of his cherished Yosemite is apt to give up the attempt in despair. If anything, the situation is worse to-day than it ever was. Formerly one had the choice of only two explanations and could with some readiness "choose sides." In fact, it was quite the fashion then to do so. One was either a Whitney-man, committed to the dropped-block hypothesis, or else one was a firm believer in the potency of ice erosion. But the advent of successive new explanations, of late years, has greatly complicated things, so that now the layman, thoroughly bewildered, scarcely knows to which authority he had best pin his faith. In the meantime the different guide books on the market, with the best intentions in the world, are each espousing a different cause, and thus keep the pot of confusion boiling.

Surely it will be agreed that the time has come to ameliorate this state of things. This is what was thought and said in Washington last spring. In the end, does not the Government owe it to the intelligent citizens of this country to make an effort to enlighten them in a matter of this sort, to furnish them with reliable authoritative information? The year of the San Francisco exposition, which doubtless will see an unprecedented influx of tourists into Yosemite Valley, naturally suggested itself as a particularly opportune time to effectively disseminate information among the public; and accordingly it was decided to dispatch the field parties at once in order that the necessary data might be collected and worked up in ample time.

As to the character of the publication, may there be no misapprehension: it is not to be technical or "dry," as scientific writings are often accused of being by the public; an effort will be made to present the rather complicated story of the Yosemite in simple, readable language, devoid as far as practicable of scientific phraseology and supplemented by numerous illustrations. It is intended that the account shall be attractive to the layman, that its pages shall speak to him, as it were, instead of treating him in that coldly informational, impersonal way that sometimes seems to forget that people have souls as well as intellects.

The party that was sent out by the United States Geological Survey last year was composed of two geologists each of which was to pursue a special line of study. Mr. F. C. Calkins, a geologist of ripe experience (and a graduate of the University of California) undertook the petrographic and structural examinations, that is to say, the study of the characters and relations of the different kinds of rock occurring in the area; while the writer was charged with the physiographic phases of the problem, that is, with the determination of the mode of evolution of the features of the landscape. Both men were to cover the same territory, their work being mutually supplementary.

Perhaps the reasons for this division of labor will not be immediately apparent to the reader; it may therefore be well, before entering upon an account of the manner in which the work was executed, first to state what is the nature of the Yosemite problem.

Broadly speaking, it involves two questions: the more specific one of the evolution of the Yosemite Valley, and the more general one of the geologic history of the Sierra Nevada, the mountain range in which the Yosemite lies hewn. The latter history is a complex affair that takes one back through several turbulent geologic periods, to times when great masses of molten rock pressed up from beneath, invaded the surface rocks and, possibly finding vent in orifices here and there, issued forth in the form of lava flows; and to a still earlier date when the area now occupied by the Sierra Nevada was not even land, but was covered by the sea, and received vast

deposits of sediment from the continent to the east, the sediments that later became the surface rocks. To decipher the record of these multifarious events one must patiently study the different rock species of the Sierra and work out the relations they bear to one another.

The evolution of the Yosemite Valley, on the other hand, is from the geologist's point of view a relatively modern and brief episode. The valley is strictly an erosional feature (Whitney's fault block hypothesis has been disposed of), and like all the cañons and valleys about us belongs to the landscape of the present, that is, of the last of many time divisions of the earth's geologic history—the one commonly referred to as the Quaternary. The Sierra Nevada itself did not attain its present height until the close of Tertiary time (at the end of widespread crustal upwarpings and subsidences, it remained standing in the form of a huge crust block, upheaved at the eastern edge and tilted to westward); the series of deep cañons carved in its long western slope are therefore to be regarded as dating essentially from the time of these upheavals. The cañon of the Merced River, of which the Yosemite forms a section, is one member of this series of cañons.

The study of the evolution of the Yosemite Valley, it will be clear from this, amounts virtually to a study of the erosional events of Quaternary time and of the successive changes in the landscape which these events brought about. Now the general character of these events is already fairly well known through research in other parts of the world. It is definitely established, for one thing, that it was during Quarternary times that occurred the great ice invasions which affected the northern portion of this continent and of Europe. In those days the Sierra Nevada was also covered with extensive ice fields, as has been recognized by many observers; in fact, its upper portions constituted a separate center of snow accumulation whence long tongue-like glaciers flowed down through the principal cañons and valleys. Whether the ice reached the Yosemite Valley or not, it will be remembered, was once a hotly debated question. Unfortunately the exact extent of the glaciers had not been traced out and the debaters had to rely for the most part on the more obvious evidences of

ice erosion which one may readily recognize at a glance. In the High Sierra such evidences are conspicuous, indeed they fairly leap to the eye; but lower down on the flanks of the range they become progressively dimmer until at last they all but fade away. The Yosemite region, as fate would have it, lies in this very zone of increasing obscurity. At its head glacial signs are plain enough, but toward its lower end they become so faint as to be easily overlooked. No wonder that opinions have varied widely regarding the glacial history of the valley and still more so about the extent to which it has been remodeled by the ice.

Naturally it seemed of prime importance to the investigators last year to make an effort to settle this question of ice erosion in the Yosemite Valley, to establish definitely how far the ice advanced and, if possible, how much excavational work it achieved. The physiographer of the party accordingly devoted the better part of his time to a search for ice signs.

The manner in which he went about it may be of some interest. Other investigators have relied in no small measure upon topographic indices for the determination of the limits of the ice as well as for a measure of its erosional work. The sculpture of the Yosemite region, however, is notably erratic and as an index of ice erosion quite deceptive (for reasons that will become apparent later); besides it is to be borne in mind that there was not only one ice age, as it is popularly termed, but several ice epochs, the glaciers of which differed greatly in extent and eroding power. The matter is therefore much more complicated than at first it seems. For these reasons the writer deemed it wiser to regard the topography not as a source of information but as one of the mysteries to be explained. His plan was first to trace out the glacial moraines, that is, the ridges of ice-transported débris that accumulated along the margins and at the fronts of the ancient glaciers. Previous visits had shown him that deposits of this sort are abundant and fairly well preserved in many parts of the Yosemite region. By mapping them systematically on the large-scale map of the valley, he hoped to be able to establish the exact outlines of the ice streams, and thus to lay a sound foundation for further glacial research.

A long and laborious task this mapping of moraines proved to be. For the ice of each period advanced and retreated not in simple, uninterrupted cycles, but with many minor fluctuations. After the glaciers had reached their maximum extent and began to recede, they made repeated feeble re-advances, pulsations, as it were, of progressively diminishing strength, each of which left a cordon of moraines to witness its magnitude. As a consequence there are now several series of moraines, both across the valley floors and along the mountain slopes. The former, or terminal moraines, record the oscillations of the glacier ends, while the latter, or lateral moraines, mark the width of the ice streams and their level at each stage.

The actual mapping of the moraines was accomplished throughout by pacing surveys along their crests, directions being taken by hand compass and altitudes by aneroid. Seldom was it practicable to sketch the moraines from an elevated vantage point, for, composed as they are of disintegrating rock débris, moraines inherently offer good ground for vegetation and are almost everywhere ensconced in forest or in chaparral. This fact in itself, as one may imagine, contributed not a little to the slowness of the mapper's task. The daily routine consisted of tramping through the woods or fighting through the brush, always counting paces—for the distances must be faithfully measured, no matter how bad the going, in order that the moraine crests might be correctly plotted on the map. Several months were devoted to this work, it being stopped only by the advent of the snow early in December.

The results obtained were, to say the least gratifying. As the moraine map grew it began to tell a story—a story surprisingly vivid and complete in details, considering the elusive character of the facts with which it dealt; a story, too, that rather insisted on shaping itself and occasionally took turns unexpected by the investigator. Indeed the writer will frankly confess that the glacial history of the Yosemite country turned out in many respects different from what he had anticipated,—different, too, from the various interpretations given by those who have written about the ancient Sierra glaciers. Early in the investigation the moraine map

began to set things right: many long-cherished notions its lines began to substantiate and many long-taught theories they proceeded to disrupt. New revelations presented themselves from day to day. Here were moraines plastered upon the landscape in a manner suggesting that the ice had little or no eroding power, while yonder loomed sharply truncated spurs of solid rock, proclaiming ice erosion of the intensest sort. Here was a moraine ascending hundreds of feet in downstream direction, while in another place the ice had passed by a gap considerably lower than its surface without taking advantage of the outlet. One glacier after straddling a ridge for miles had split just before reaching a saddle. Why did it balk at the inviting hollow? Surely these glaciers behaved in unexpected ways.

The interest continued until the very end. The search had been organized in the upper country where ice signs are relatively plentiful, and was carried thence to progressively lower levels. Where did the glaciers end? What was the lowest point on the Sierra flank reached by them? Is Muir right in his assertion that the ice enveloped the entire range down to its foot? Such were the questions that urged themselves upon the investigator.

It is scarcely desired here to go into particulars,—it would not be meet thus to anticipate the government's publication, but this much may be stated with propriety: the ice of the earlier epochs was very extensive and descended far beyond the Yosemite, yet it failed to reach the Sierra foot by many miles. The increase of temperature from the 5,000-foot level down to the foothills must have been almost as pronounced in glacial times as it is now. The vast ice fields of the upper Sierra contracted downward into individual ice tongues, and these again, as they protruded below the zone of glacial climate, diminished in strength with great rapidity, in spite of the protection from the sun afforded them by their profound, rock-walled channels. As a consequence the Sierra glaciers came rather abruptly to an end. The evidence of their termination, it should be said, is unmistakable, if faint and hidden; one must be willing to grope through the manzanita to secure it.

Reference has been made to "earlier glacial epochs." It may be asked, how were the records of the different epochs distinguished from each other? Chiefly by the degree of disintegration of their constituent materials. The moraines of the last epoch are relatively fresh-looking, at least sufficiently well preserved to retain their characteristic ridge form. Sharp-crested as a rule, they have the appearance in many places of railroad embankments following a definite alignment of straight stretches and smooth curves, but left in a rough, unfinished state, with large boulders perching upon them or protruding from their sides. A large proportion of the rock fragments, cobbles and boulders in them are but little weathered and retain the smooth surfaces characteristic of ice wear. The older moraines, on the other hand, have for the most part lost their original sharp-crested form, and have been converted to shapeless masses covered with residual soil and interrupted in many places by little valleys or ravines. Only occasional large boulders of resistant rock survive upon them, and even these have lost most of their ice-worn surface and are surrounded by fragments scaled off from their sides. Dim moraines, such as these, it will readily be understood, can scarcely be traced by their configuration or alignment. The only reliable method is to identify them by their rock materials. Moraines as a rule contain mixtures of different kinds of rock samples, as it were, of all the rock formations over which the ice has passed. Some of these rock types are apt to be distinctive and readily recognized; for the glacialist they are truly diagnostic. When he encounters one of them he knows at once he is dealing with indubitable moraine. But in order to be able thus to identify obscure glacial deposits by the rocks contained in them, it clearly behooves the glacialist to be thoroughly familiar with the rock formations occurring in each glacier basin. It was in this connection that the simultaneous carrying on of petrographic and physiographic studies proved particularly advantageous. It was the petrographer's duty to study each separate rock formation and to show the area occupied by it on the map. He was therefore often in a position to tell the physiographer, who perhaps was working farther down

stream, what manner of rocks might be expected in the moraines and what particular branch of the glacier had transported them. On the other hand, it sometimes happened that the physiographer, upon entering a new district, would notice in the moraines fragments of a new rock type, and thus was able to predict the existence of a certain formation in the region whence the ice had come. The two men thus carried on team work of a mutually profitable sort.

That the identification of the disintegrated older moraines was not always an easy matter, may readily be surmised. The rocks of the Yosemite region unfortunately are almost exclusively granites, popularly speaking, that is, crystalline igneous rocks closely allied to each other and not greatly differing in general aspect, at least not to the untrained eye. When thoroughly weathered these rocks look much alike. As a consequence the physiographer was at times obliged to stop his pacing and spend an hour with his geological hammer breaking pebbles and chipping corners off boulders in order to discover one of the desired diagnostic types. Such work, however, although it consumed much time, usually yielded gratifying results. An afternoon of rock breaking on Glacier Point established once and for all the fact that that promonotory has been overwhelmed by the ice of an early epoch—an epoch so early that except for some boulders and cobbles encased in residual soil in a protecting hollow, all sign of the ice flood has long since disappeared. Yet the evidence is indisputable, many of the cobbles unearthed and broken proving to belong to rock types from the Little Yosemite region and foreign to the Glacier Point neighborhood. It may be said in passing that the basin-shaped hollows in the bare rock surfaces of Glacier Point are not pot-holes produced by streams under the ice, but are merely the result of rapid disintegration of the rock in particularly vulnerable spots. It is certain that the ice did not leave these depressions, for there is ample evidence in various localities showing that since the early ice flood which visited Glacier Point the surface of the rock has been removed to the depth of several feet from bare, unprotected places of this sort by the slow processes of disintegration.

One thing must have become patent from the foregoing pages, namely that the study of a glacial valley such as the Yosemite can scarcely hope to be exhaustive unless it be extended to the higher regions that were the sources of the ice. The need of an acquaintance with these regions soon impressed itself upon the investigators and accordingly they deployed over the entire headwaters country of the Merced River as well as over the basin of the Tuolumne. The latter territory proved of unusual interest, for it evidently constituted the great central névé field of the middle Sierra and poured its ice not only down the Grand Cañon of the Tuolumne, but across several passes into the Tenaya and Merced basins, as well as down the cañons of the east facing Sierra front. The height attained by the ice and the extent of its various diversions during each separate epoch were ascertained with considerable care, while at the same time the rock types present in the area and transported from it by the ice were examined in some detail. Late in September the investigators returned to the Yosemite Valley, and resumed their labors there enriched with an insight into the character of the region that was the birthplace of the Yosemite glaciers.

A visit was also made to the Hetch Hetchy Valley, the Grand Cañon of the Tuolumne and Lake Eleanor. Some valuable lessons in the glacial history of the Sierra Nevada were learnt on that trip, not the least valuable of which was derived from the fact that the ice stream that traversed the Hetch Hetchy Valley was vastly superior in volume and in length to the Yosemite Glacier. The opinion has been advanced that the lesser dimensions of the Hetch Hetchy Valley bespeak erosion by a less powerful ice stream than that which enlarged the Yosemite Valley. This is utterly refuted by the morainal record. The Hetch Hetchy Valley, it appears, was fairly smothered under ice at times when the Yosemite was but half filled. That it was not enlarged proportionately to the volume of its glacier is to be ascribed primarily to the exceeding resistance of its massive rocks. The lesson is that in a region of massive granites such as the Sierra Nevada, the size of a valley cannot safely be taken as an index of the magnitude of the glacier that passed through it.

This brings us to that part of the investigation, the aim of which was to determine the amount of erosional work performed by the ice. On a previous page, it will be remembered, the statement was made that the sculpture of the Yosemite Valley is erratic and, as an index to ice erosion, most deceiving. The explanation lies, for the Yosemite as it does for the Hetch Hetchy, in the structural characteristics of the country rock. The interpretation of these characteristics given in the recent booklet on the origin of the Yosemite Valley, published by the Department of the Interior, the writer is happy to state, was verified and confirmed by the structural studies of last summer. As was pointed out in that booklet, the granites of the Yosemite region are peculiar in that they are not everywhere traversed by natural partings or "joints." Large masses of them, some half a mile or more in extent, have remained undivided, absolutely solid, although in other places the same rock may be fissured at intervals of only a few feet. That these extreme variations in structure must have greatly affected the eroding efficiency of the ice, will readily be understood. While the glaciers might work to advantage in rocks divided into small joint blocks, they were relatively powerless when dealing with massive granite. The latter they could reduce only by superficial abrasion, a slow process the efficiency of which has been much overestimated. As a result, the ice-carved topography of the Yosemite country is a singularly varied one, well developed, typical glacial forms alternating with others not suggestive of ice work at all.

On the whole, it may be said that this phase of the Yosemite problem has remained the most misunderstood. Former observers have not always made sufficient allowance for the exceptional nature of the granites of the Sierra. Perhaps they had in mind the work of glaciers in regions of more normally jointed rocks and thus were misled in assigning too great erosional achievements to the ice streams of the Yosemite region. The main lessons learned last summer in this regard are that except in certain restricted localities, such as the Yosemite Valley proper, the rock character precluded extensive remodeling by the ice, and that as a consequence the landscape, although bearing the unmistakable stamp of ice

TEHIPITE DOME, 3,600 FEET.
Photo by Louis Jensen, Shaver.
Print by C. R. Clendenning, Big Creek.

LAKE TENAYA, SHOWING DOMES GLACIATED BY OVERFLOW FROM TUOLUMNE GLACIER.

Photo by F. I. Wheat.

work, still retains very largely the features given it by normal weather-and-stream erosion prior to the advent of the ice.

But one other line of studies will here be mentioned, namely that of the evolution of the remarkable cliffs and domes of the Yosemite landscape. That the domes have acquired their rounded forms through the progressive casting off of shells —through exfoliation, as it is termed,—has long since been recognized. That a similar process may be at work on the faces of many of the great mural cliffs has been surmised before and at least tentatively announced. It seemed desirable to verify the correctness of that interpretation, and accordingly many observations were made on the cliffs and the materials composing them. In the main it was found that exfoliation is rather more general in the Yosemite region than has commonly been supposed, and that many of the slabs and sheets clinging to cliff faces are really products of exfoliation, that is, of external influences, instead of being remnants of structures originally existing in the granite. It would appear therefore that in the Yosemite region massive rock prevails to a far greater degree than at first sight seems to be the case. And this fact must necessarily influence our views as to the amount of excavating to be accredited to the ice: in materials so unfavorable as massive granite it seems unlikely that glaciers would have been able to accomplish any great results.

In conclusion it should be said that last summer's investigations, elaborate though they were, are not to be considered exhaustive nor at all complete. Some portions of the Yosemite district were accorded but little more than a cursory glance and will require more thorough study. Again, it seems important that the principal conclusions reached be tested in other parts of the Sierra Nevada, and that the evolution of the Yosemite Valley be compared with that of each of the other Yosemites. It is sincerely hoped that this may be accomplished during the present year.

By courtesy of The Mountaineers.

THROUGH THE OLYMPICS WITH THE MOUNTAINEERS

By Marion Randall Parsons

The Olympic Range occupies a peninsula, about eighty miles wide, which separates Puget Sound from the Pacific, and rises abruptly from the ocean to an altitude of 8,200 feet. Deep glacial cañons cut the chain into a series of high, serrated ridges that culminate near Mt. Olympus in several interesting groups of precipitous peaks. Like the Cascade Range, the Olympics have three characteristic zones: dense forests, reaching from sea-level to an altitude of about 3,500 feet; open park country, rising nearly a thousand feet higher; third and highest, the alpine region, where bold peaks and grandly sculptured ranges of dark metamorphic rock are clothed in perpetual snow. Here living glaciers, some of them five miles long, are still at work carving and beautifying the range. The cañons form the most practicable avenues of approach to the high mountains, for the forested areas are not only very steep and rugged, but, owing to the heavy rainfall, are clothed in an almost impenetrable jungle of rank vegetation. The Olympic National Monument, established by President Roosevelt in 1909, preserves the region as one of the nation's playgrounds.

Announcement of an outing through the heart of these little-known mountains brought Appalachian, Mazama and Sierra recruits to join the 1913 outing of the Seattle Mountaineers. The projected trip was a pioneering undertaking, for few parties had hitherto even reached Mt. Olympus and none had been known to cross the range and follow down its western flanks to the Pacific. Much preliminary work was therefore necessary to ensure the success of the trip. On the west a trail from Lake Queniult to the Low Divide was located and built. On the east the rough trail up the Elwha River was rebuilt and a new trail put through from the Elwha to the Low Divide, where the two ends were joined only three days before we reached that point.

The outing party, numbering one hundred, assembled at Seattle aboard the steamer "Sol Duc" the evening of August

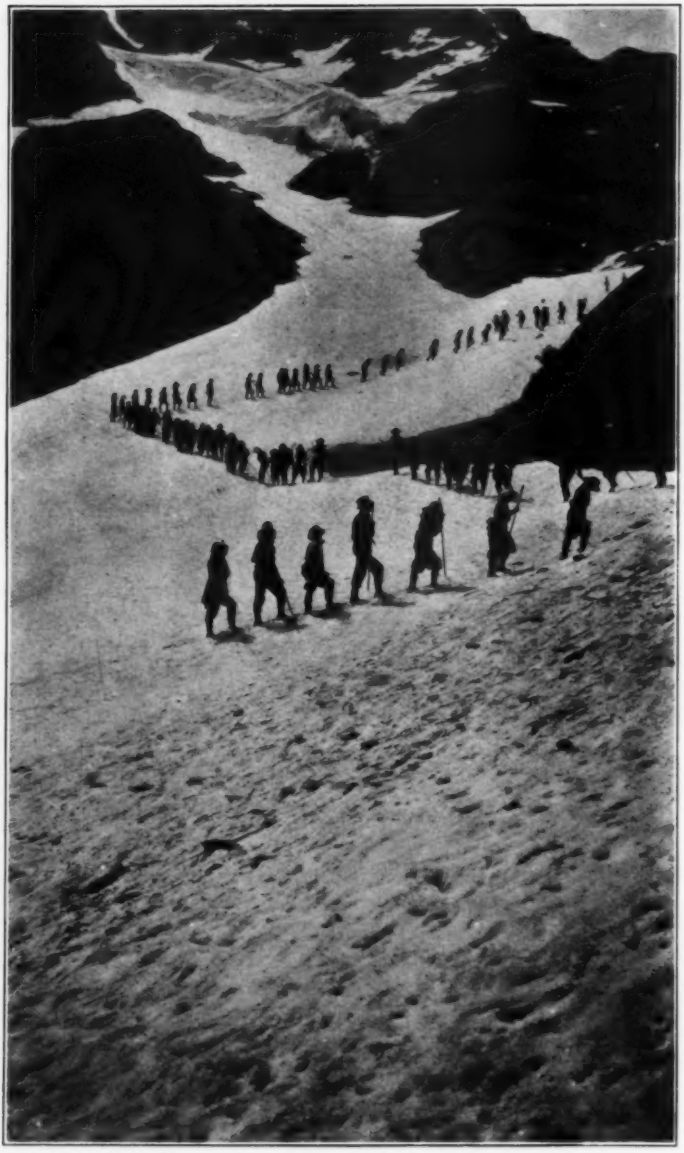
1st. All night we traveled up Puget Sound and early morning found us breakfasting in Port Angeles, half-way down the Straits of Juan de Fuca. Automobiles, generously furnished by citizens of that historic town, carried us to Elwha Bridge, where the trail began.

Three days of forest travel merge together in memory like one long day of many delights. From bottomlands where homesteads nestled; through hot, dusty burns whose devastation was partly hidden in rosy masses of epilobium; along ridges white with the mist-like bloom of spiræa; through deep, silent forests, moss-hung, and carpeted with ferns and delicate flowers; through sun-dappled groves of alders, and up among higher hills, where far above us rose green strips of park-land, we journeyed. Each camp brought closer the day that dawns early in every outing, when, with strange faces grown familiar and old companionships renewed, the haphazard acquaintanceship of fellow travelers becomes the friendly fellowship of the open trail.

The fourth day we started together in line to make three log crossings of the turbulent Elwha. Life-lines were stretched to give confidence to the timid, and strong men were stationed on the banks below, ready to rescue any luckless mountaineer who should slip. No such disaster occurring, however, the company was disbanded at the last crossing and each was free to take his own time into camp.

The forest was glorious that morning. Amabilis firs, hemlocks *(Tsuga heterophylla)*, Douglas fir *(Pseudotsuga taxifolia)*, western red cedars *(Thuja plicata)*, and, more rarely, mountain pines *(P. monticola)*, clothed mountain flank and cañon floor, their dense canopy of interlacing branches shutting out sun and wind alike. On either side of the trail the ground was hidden by growing things—fern fronds, creeping raspberries, dwarf dogwood, starry white clintonia, and linnæa, loveliest of forest blossoms, with glossy leaflets and delicate, faintly flushed twin bells. Mosses and ferns, huckleberries and seedling conifers likewise took possession of each fallen tree, making its death but a rung in the ladder for young lives crowding upward. But in spite of such exuberance of life it seemed a sombre place, where age and decay followed fast upon

MARION GORGE, ELWHA BASIN.
Photo by A. H. Denman.



LOWER SNOWFIELDS OF MT. SEATTLE.

Photo by Rodney L. Glisan.

growth. How faces brightened when, towards noon, we reached an open gravel bar beside a bend in the Elwha where the sun shone brightly, the river ran sparkling over rapids, and on every hand bloomed beds of pink and yellow mimulus! In the heart of the solemn, aged forest we had surprised a forgotten lurking place of spring.

Later we emerged from the woods into an alpine park whose every rock and hillock was crowned by patient mountaineers awaiting the pack-train. This was Elwha Basin, our home for eight days to come, a sloping amphitheatre lying under a snowy range. Its high western walls, streaked with snow and hung with waterfalls, concealed the neighboring peaks of Queets and Meany, but the splendidly sculptured Seattle Group loomed grandly above us to southward. Far down the Elwha Cañon rose Mt. Anderson, whose wide snow-fields shone upon us each evening rosy with alpenglow. On the ridges of the basin, out of the track of avalanches, long arms of forest invaded the heather slopes; and daisies, columbine and violets bloomed on the uplands though the lower meadows were hidden by snow.

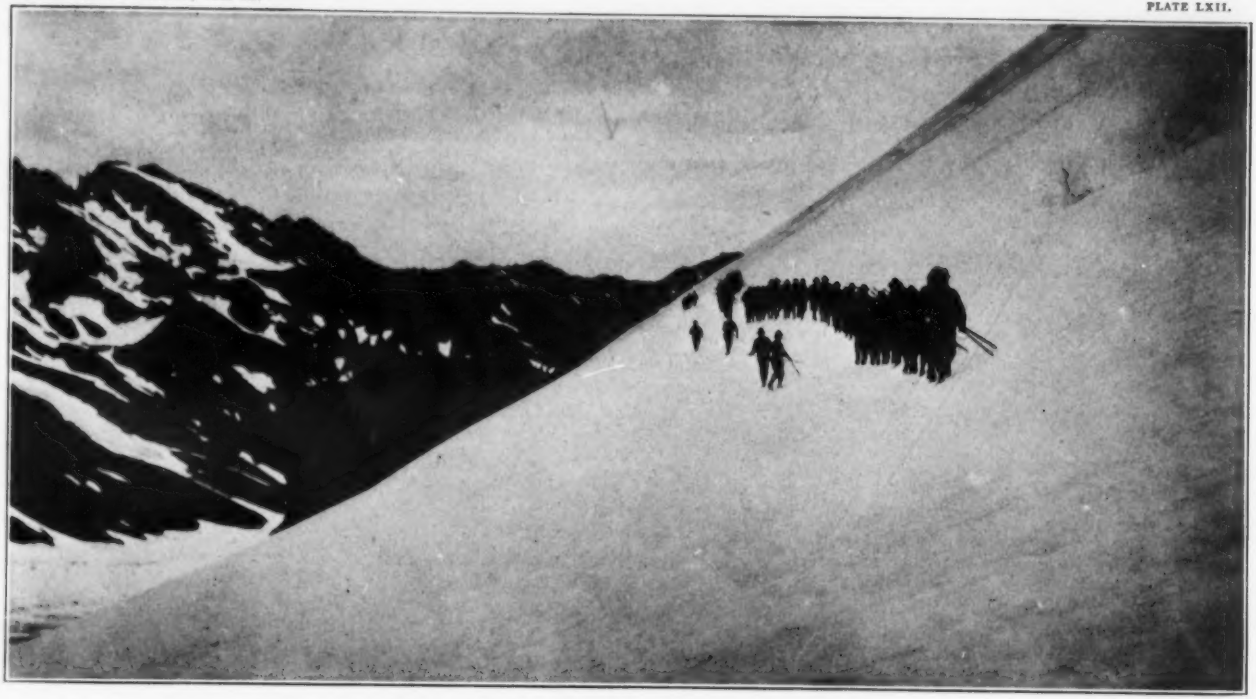
After a day devoted to camp making and fitting boots with screw-caulks we were ready for the practice climb, an unnamed peak of the Seattle Group. Eighty-two climbers were enrolled. All were equipped with alpenstocks or ice axes and all wore dark glasses and heavy gauntlets, and smeared faces with grease paint as protection against snow-burn. Across the basin, up snow-fields, past the sculptured ice of a glacier we climbed, and on over higher snow-fields to a ridge of rock. Here our troubles began. Showers of loosened rocks sent down by novices so delayed the long line that noon was upon us before all had crossed from snow to rocks. After luncheon we resumed our upward way. It was slow, harassing work, swinging from rock to snow and back again, always menaced by falling stones. In some places climbing was quite difficult. Here the efficiency of the Mountaineers organization showed admirably. Wherever a helping hand could possibly be needed, wherever there was chance for accident, a reliable man was posted, ready to chop steps in the ice, to use his alpenstock for foot or hand hold, or to steady a life-line. The summit was

too small to accommodate our whole party at once, so scant opportunity was given to enjoy the view we had toiled and risked so much to gain. As daylight hours were growing few we descended to the snow-fields by a shorter route. Three times only by prompt action were serious accidents averted, for not only was the descent dangerous, but many were feeling the strain of long hours of exertion. Once on the snow-fields we made rapid time and before dark were in camp, thankful that a really dangerous climb was safely over.

Three days later we started for Mt. Olympus, knapsacking, as late snows prevented animals from crossing Dodwell-Rixon Pass. A climb of 2,500 feet and a walk of five miles brought us to temporary camp in Queets Basin, a park-like valley between Mt. Queets and Mt. Olympus. On three sides rose dark mountains relieved by great snow-fields and masses of glacial ice. Camp was on a sloping bench between two deep cut streams. Groups of alpine firs and hemlocks, mountain pine and Alaska cedar *(Chamaecyparis nootkatensis)* framed lovely pictures of Mt. Queets; but Olympus, whose triple crown had shone grandly before us from Dodwell-Rixon Pass, was hidden by the front of the Humes Glacier, a wonderful wall of pillared seracs buttressing the flaming sunset arch overhead. Our camp was carpeted with thick mats of bryanthus, cassiope and dwarf huckleberry, and bordered with rhododendron patches or tall white spikes of squaw grass *(Xerophyllum tenax)*. In the hollows erythronium lilies budded through the snow, and along stream-beds and marshy bottoms bloomed patches of buttercups, veronica, blue violets or the curious, insectivorous *pinguicula vulgaris*.

Sunset was a glorious spectacle, enjoyed by many of us from our sleeping-bags that we might be better prepared for our fire-light breakfast before dawn. Sixty-seven of us made the climb, longer but easier than the try-out on Seattle had been. Our course lay over the Humes Glacier, across Blizzard Pass, down seven hundred feet to the Hoh Glacier and up its length to the East Peak. Except for a short rock climb at the summit it was all snow and ice work, but only once was it steep enough to require the chopping of steps or the use of a life-line.

MT. OLYMPUS FROM DODWELL-RIXON PASS.
Photo by Rodney L. Glisan.



SNOWFIELD ABOVE THE HOH GLACIER, MT. OLYMPUS.
Photo by Rodney L. Glisan.

All the more could we enjoy the grandeur that surrounded us. This central portion of the Olympic Range was one of the wildest regions we had ever seen. The three peaks of Olympus and the high ranges radiating from them were all dark, precipitous mountains of metamorphic rock. Glaciers with their castellated ice cliffs and their brown-veined, blue-shadowed crevasses, shone all about us. From the Straits we had followed the paths of their ancient flow. Now we stood among their living fountains and could trace the course of their cañons circling among forested ranges to the Pacific. The ocean was veiled in fog, but a silver strip of the Straits showed far to the north. Along the eastern horizon the Cascades lay outstretched for two hundred miles, their shining ranks crowned by the loftier, more gloriously radiant volcanic cones, Baker, Rainier, Adams and St. Helens.

One more night we spent in Queets Basin where the anticipated Olympian rains overtook us with most of our rainproof outfits many miles away. After another day in Elwha Basin, which offered choice of an easy climb of Mt. Barnes, a difficult ascent of Mt. Meany, or a lazy time of rest, we broke camp.

Four miles down the Elwha branched the new trail, leading to the Low Divide. There, at the edge of a meadow, bright with lupines, elephants' heads, *(Pedicularis groenlandica)* columbine, and great masses of delphinium, waist-high, we made camp for three rainy nights. One clear morning gave opportunity for a visit to Martin's Park and Mt. Christy, an unfrequented place where fresh elk tracks everywhere preceded us—beside ponds where yellow lily pads bloomed, among marshes fragrant with violets, and up in the level, heather-clad park where streams from Christy's glaciers meandered. Then for a day and a night rain fell, and we huddled together under tents and flies, burned untold quantities of firewood, and drove the cooks to distraction with our clamorous appetites.

Though the high mountains were now left behind, the most difficult part of our journey was yet to come. The trail beyond the Low Divide was of the roughest description, and the forest cover on the more rainy western slope was even more tropical in its luxuriance. Tangled labyrinths of fallen logs, dense

thickets of alders or young conifers, treacherous marshy bottoms, hillside bogs, where floundering animals wallowed helplessly in the mire, and insecure footing along loose edges of hastily cut hillside trails—all these had to be contended with. Sometimes it was but a blazed way that we followed over rough ground with hardly a sign of clearing underfoot. Sometimes we followed in the beaten track of elk, who apparently strike straight for their goal, regardless of contours. Their ups and downs through the rolling forest gave rapid walkers somewhat the sensation of riding the crests of a raging sea. Pasturage was at times a grave problem. Our pioneer pack animals suffered so much, indeed, both from lack of food and from the terrible trails, that for days we voluntarily burdened ourselves with many pounds of our belongings to relieve them. As travel increases clearings should be made and planted with forage. With improved trails and better feed this route across the Olympic Peninsula would soon become one of the great scenic features of the Northwest.

After another rainy camp at Promise Creek came a day of many vicissitudes, beginning with five log crossings of the Queniult River, where twice a dismal splash announced the fall of a mountaineer. A pretty incident occurred as we waited upon the bank for a tree to be felled for us. A water ouzel, feeding in the stream, repeatedly flew back and forth within a few feet of us to investigate gay sweaters or bandannas. All through this region both birds and Douglas squirrels were remarkably tame. The squirrels, indeed, showed embarrassing partiality for us as bed-fellows. At noon we reached a side cañon about two hundred and fifty feet deep where jutting rock, impossible to dislodge without dynamite, made it necessary to unpack the animals and carry the loads across by hand. The women, the cooks, and a group of men detailed for camp making pushed forward, while the majority of the men waited to help with the pack-train.

Camp was in a lovely spot, a bench above a stream overarched by two great moss-hung maples *(Acer macrophyllum)*, and surrounded by fir forests where twilight gathered early. Hours of hungry waiting were rewarded by the arrival of thirty dunnage bags. Commissary was reported at least two

hours behind. Improvising lanterns out of tin basins and candles, an investigating party started back. Long after dark the lantern corps returned with a solitary messenger bearing tidings that the whole train was benighted far down the trail. He brought a bag of hardtack, a quarter of a disk apiece, and on that and a cup of cold water we went to bed, the contents of thirty bags so conscientiously distributed among sixty sufferers that none might claim the base distinction of having slept warm.

But even in the cold dawn not a complaint was heard. About 8 o'clock frying pans, bacon, and flour began to appear, borne on the backs of fellow mountaineers. We broke our fast with three prunes apiece and some time later, twenty-two hours after the last square meal, we were feasting royally. However, ours had been the easier part. Not only had the men carried all the baggage across the cañon, not only had they dragged animals out of the mire, unpacked, repacked, unpacked them again, but they had carried into camp from forty to fifty pounds apiece on their own shoulders. The exhausted animals could carry their loads no farther. Time and again one would slip on the loose edges of the trail and roll down the bank. It seemed a miracle that none was hurt. Fortunately sacks of grain were cached here and the itinerary admitted an extra day of rest.

A long climb the following morning brought us to the Queets-Queniult Divide, a high park region of heather slopes and erythronium beds, of hemlock groves and dodecatheon-starred strips of meadows. Later the divide narrowed to a mere knife-edge. From one watershed to the other and back the trail swung, on one side the deep cañon of the Queets and far away, beyond rolling forest lands, the white, vision-like crown of Olympus; on the other a green basin where lay camp.

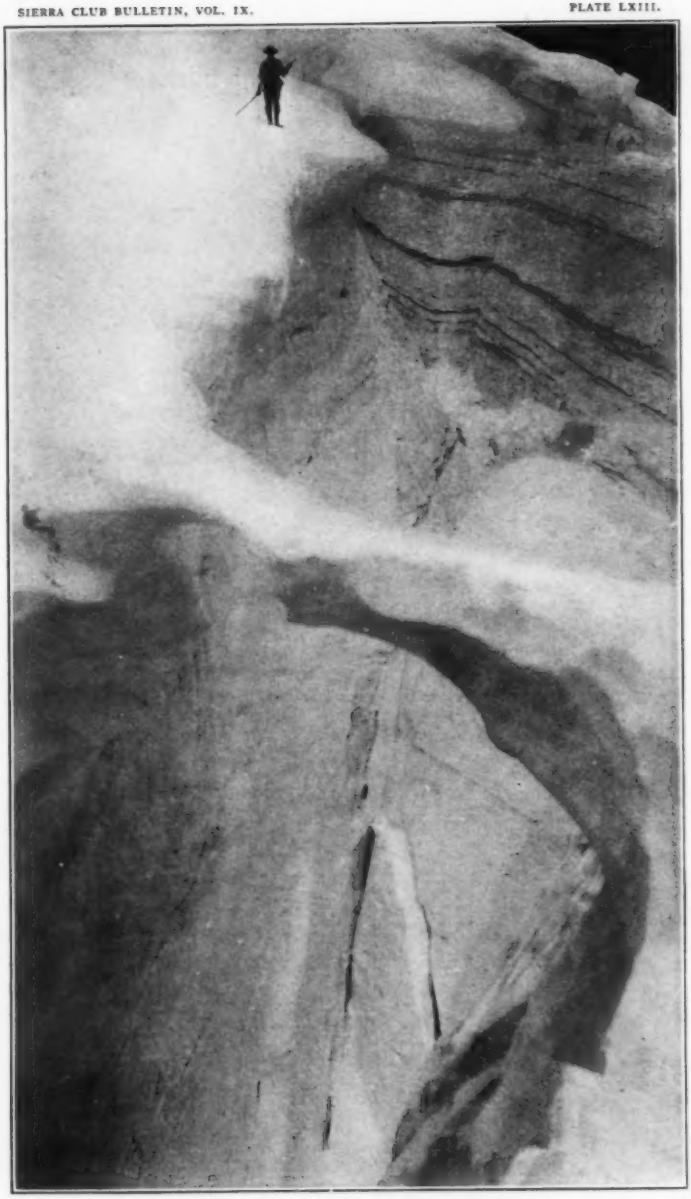
One more day of forest trail brought us to the outposts of civilization at Lake Queniult. Above the lake the river valley was dotted with prosperous farms. Gigantic Sitka spruces, *(Picea sitchensis)*, broad-leaf maples, and vine maples *(Acer circinatum)*, here replaced the firs and hemlocks we had travelled amongst so long. Our campfire circle that night held many strange faces—farming people assembled to greet us,

and Indian canoe-men with their squaws and children. Here we held our circus to the great delight of our brown-skinned visitors.

Thirty-five miles away, across Lake Queniult and down where the Queniult River met the Pacific, stood the Indian village, Tahola, whither we were to journey in canoes. In our honor the Indians had hewn and blasted a way through log jams around which portages had hitherto been made, and for the first time in twelve years the whole river was open. Most of the twenty-three canoes that awaited us were manned by two paddlers, in bow and stern. In some a squaw occupied the bow, as skilful and untiring as her husband. Some brought their children along, and one canoe held the entire family, including the dog and cat. Their paddles were rather unusual in design, short-handled, and with a pointed blade. Among rapids or log jams a pole was used. Our canoe was a cedar dugout, twenty-eight feet long, paddled by one man and containing seven grown people and a three-year-old Indian boy.

Only two hundred and fifty members remain of the Queniult tribe. Another small tribe on the extreme northwestern point of the peninsula, near Neah Bay, alone of all the tribes of the Northwest, speaks the Queniult language. The Queniult people are an interesting tribe, with unexpected depths of intellectuality beneath their characteristic Indian boastfulness. Even our canoe-man, an acknowledged buffoon, could seriously discuss conditions among his tribesmen, their longing to hold the reservation lands in fee simple, their losing fight against drink. In another moment his wonderfully resonant voice would sound over river and forest in a wild chant that bespoke nothing but the aboriginal.

What a picture they made, these dark, graceful people, and what a wonderful experience their strength and skill brought us! Beautiful though Lake Queniult was in the silvery morning mist, it was not until we were across it and the incongruous launch that towed us so far had cast our long line of canoes adrift that the true charm of the day began. The river below the lake flowed through Queniult Indian Reservation. Here and there on a beach stood a wickyup with salmon nets hung in the sun, or on a low bluff a clearing held an Indian



CREVASSE IN HOH GLACIER, MT. OLYMPUS.
Photo by H. V. Abel.

INDIAN CANOES ON QUENIULT RIVER.
Photos by Edward T. Parsons.

cabin. The river banks were lined with a dense forest of Sitka spruce, relieved with patches of alders or cottonwoods, or vine maples turning to copper and bronze in prophecy of autumn. The journey brought in succession idyllic, dreamy stretches of smoothly flowing river where wild ducks were startled into flight before our bows; wide bends overarched with green among whose shadowy vistas shone the flash of a paddle; quickly flowing riffles where our canoes scraped bottom; tangled log jams with swirling eddies boiling amongst them, and stormy rapids where the river ran white and immediate destruction among the rocks seemed certain. It was a day of constant change, of incessant interest, of excitement alternating with deep peace, unlike any other day that our mountain experience had brought us. We, who had so often felt the strangely intimate appeal of running waters; who had lingered beside slow, eddying green courses or above cascades flying irised banners in the sunlight; who on warm afternoons had bathed in rippling pools that shone with copper and gold under the slant sun; who had even known the rarer delight of following many a little river to its source, now, borne along by the river, seemed ourselves a part of its ceaseless flow, travellers together, outbound into unknown seas.

For some miles above its mouth the river ran sluggish and deep. The sky grew overcast and the brilliant, sunlit river was toned to soft green, brown and gray. At last Tahola Village came in sight, a cluster of crudely painted houses facing unpaved, sandy streets. Though we could see a white streak of breakers at the river's mouth and hear the roar of surf, from our landing place the ocean was hidden by low dunes of sand and gravel. Heaped upon them were great piles of gray driftwood, whole trees, even four or five feet in diameter, flung up by storms and bleached to a lovely silver. Among these was our last camp. Our driftwood fire was built in the lee of a ghostly giant whose roots and massive trunk not only gave welcome shelter from the ocean winds, but formed a wonderful rostrum for the last campfire ceremonial.

Our Olympic wanderings seem to end, not with the beach walk to Moclips next day, nor the railway journey home, but here at Tahola, down on the farthest point of land where river

Photos by Edward T. Parsons.

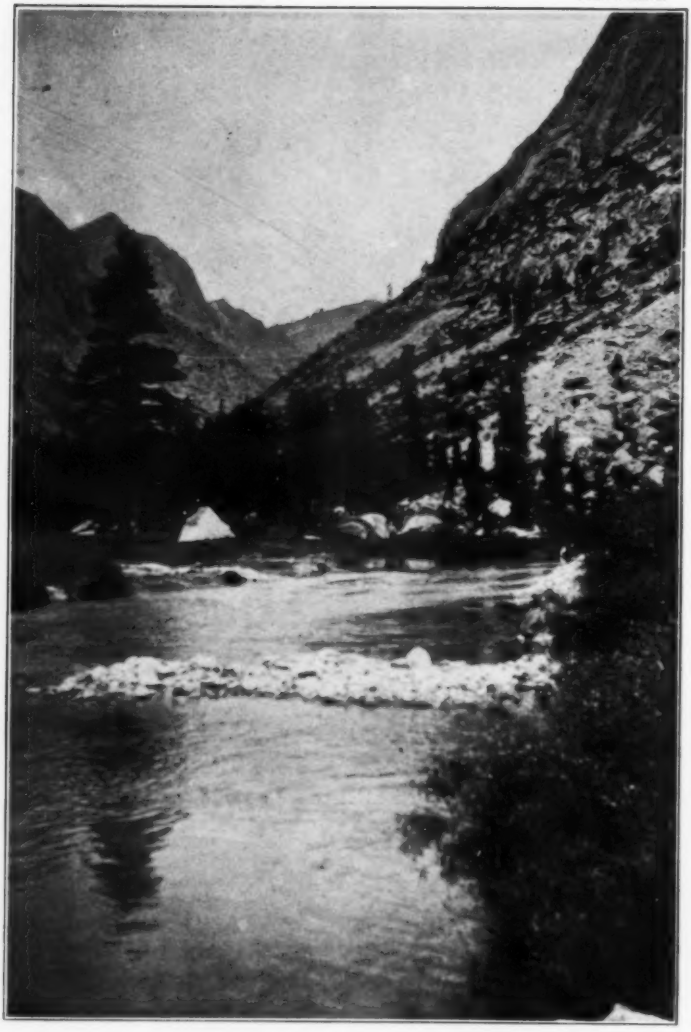
met sea in a surging rush of eddying waters. Across the river rose wooded banks and a dark, high promontory. Behind us piles of silvery driftwood concealed the town. Ahead lay the gleaming horizon line, sunlit under the fog. Beside us was the rhythmic, thundering roll of surf, the battling river water, and for all sign of human occupation the battered spars of a wreck, the perch of sea birds and scolding black crows. Though not a bright picture, like those we brought away from the mountain world, it was nevertheless one of indescribable grandeur, significant of elemental forces uncontrollable by man—all the more a fit setting, perhaps, for the home of a vanishing race.

"Oh, our manhood's prime vigour! No spirit feels waste,
Not a muscle is stopped in its playing nor sinew unbraced.
Oh, the wild joys of living! the leaping from rock up to rock,
The strong rending of boughs from the fir-tree, the cool silver shock
Of the plunge in a pool's living water, the haunt of the bear,
And the sultriness showing the lion is couched in his lair.

And the meal, the rich dates yellowed over with gold dust divine,
And the locust-flesh steeped in the pitcher, the full draught of wine.
And the sleep in the dried river-channel where bulrushes tell
That the water was wont to go warbling so softly and well.
How good is man's life, the mere living! how fit to employ
All the heart and the soul and the senses for ever in joy!"

From Robert Browning's "Saul."

KINGS RIVER CAÑON.
Photo by J. N. Le Conte.



LOOKING UP GROUSE VALLEY, 1913.
Photo by Lena M. Redington.

THE 1913 OUTING TO THE KINGS RIVER CAÑON

By Lena Martha Redington

Our special train of Pullmans left Oakland early in the afternoon of July 2d. The next morning the Southern California contingent had been attached to our train at Mojave and 10 o'clock found us at Owenyo, a desert station on the east side of the Sierra. Here the sleepers were abandoned for a strange little train of mixed composition—freight cars, old-time plush-seated coaches, cabooses, anything that could be used to hasten our progress to the land of mountain peaks. As we looked back upon the suit-cases, destined for shipment to the point where we would next see our civilized clothes, a month hence, it was as if the station of Owenyo consisted of a city block of baggage, red-tagged. For an hour we travelled on the newly improvised train through a sage-brush country where the wonderful sky, the soft green of the vegetation, and the dull yellow of the sand seemed to release the spirit from worldly cares and suggest the freedom of the unconventional days to come. On the west rose the snow-streaked heights and pinnacles of Mt. Whitney. Next in the succession of peaks came Mt. Williamson, a complete reversal of Whitney's slopes, for it is precipitous on the west, and sloping on the east. This promenade of peaks ended at Citrus, or Kearsarge, as it is now called, where another motley array of vehicles was awaiting. This time there had been gathered, from far and near, conveyances propelled by horse-power, mule-power and gasoline-power, and into them we scrambled to be whirled through sand and sagebrush to Independence.

This interesting old mining town deserves more than a passing word. Far from railroads, it is unspoiled by close association with modern civilization. But, material beings that we are, not until we had settled the lunching question did we have time even to listen to the all-Indian band playing patriotic tunes; for this was July 3d. One would have attributed the general scheme of color and festivity to Uncle Sam were it not that wide festoons of evergreen spelled the words, "Welcome

Sierra Club." The afternoon was spent in the same conveyances, en route for Pine Cañon. There we found all that was necessary for the comfort of our first night's camp.

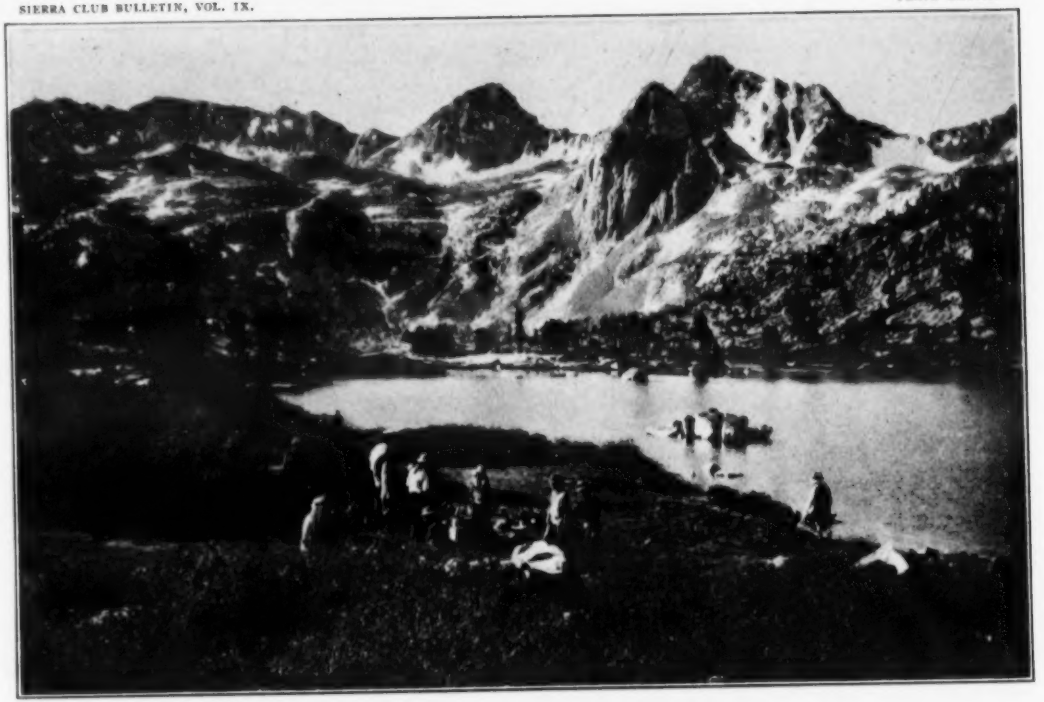
Dreadful prognostications had made Kearsarge Pass all but insurmountable, for Kearsarge Pass is 11,823 feet above sea level and it is not usual the first day to climb so high, the elevation of our camp being about 6,000 feet. We had been awed to an early sleeping-bag, so we had to forego the pleasures of a sapphire twilight and of a starry sky. But the morrow had not half the terrors and drawbacks that we had been led to expect. Every quadruped in Inyo County capable of bearing a saddle had been pressed into service for the day's climb. The cavalcade which left Pine Cañon on that first morning of real exertion seemed to be interminable.

The view from Kearsarge Pass is justly one of the most renowned in the Sierra. To the east lay Owen's Valley and Independence, now grown very tiny. Prominent on the western horizon were North Guard, Mt. Brewer and South Guard. Peering out behind Table Mountain we could see just a corner of Milestone. This glimpse of an old friend furnished occasion for reminiscence of the previous summer's outing when the Club was on the other side of the Kings-Kern Divide. Close at hand were the Kearsarge Pinnacles and the Kearsarge Lakes, stretching on down to Bullfrog Lake, or, as it is sometimes called, Lake Bryanthus. Passing these we descended into the cañon of Bubb's Creek to our second night's camp at the base of the East Vidette.

To me there has always been something surpassingly precious about the first two or three nights in the mountains. Just as the poet used to comfort his fretful child by taking him to see the stars, so are we, children of this busy world, comforted by the lustre of these clear Sierran nights.

The more restless and strenuous were not willing to leave unseen the view from University Peak, 13,000 feet, or the shores of Vidette Lakes, about 11,000 feet above the level of the sea. But the busiest preparations had for their object the Rae Lake knapsack trip. While the main party was to descend into Kings Cañon by the Bubb's Creek trail, more seasoned adventurers were weighing and discarding until they got their

LOOKING DOWN ON RAE LAKE, 1913.
Photo by Lena M. Redington.



RAE LAKE FROM LOWER END, 1913.
Photo by Lena M. Redington.

packs down to a comfortable shape and weight. The route over Glenn Pass is a steep one and does not readily admit of transportation by animals. Hence *impedimenta* must be carried by means of the human foot and shoulder. A four days' trip was planned with provisions for about sixty persons. Rae Lake is one of the most beautiful if not the most beautiful of our Sierra mountain lakes. It is encircled by a wonderful array of towering peaks which it mirrors on its island-dotted surface.

A day of idleness on the shores of the lake afforded time for varied diversions—fishing, photographing and climbing. Next day we followed down the cañon of Wood's Creek whose walls reminded us of the steep cliffs of the Kern-Kaweah gorge, Paradise Valley, our aim. Here the importance of the moment lay in determining which was the spot whose previous historic associations made it important as a camp. The pleasing combination of fern and grass, tree and rock, moss and stream, might properly have challenged any other so-called Paradise to prove its claims. The cliffs grew higher and the walls closer together as we approached the main Kings River Cañon. One more day down the banks of the South Fork, past Mist Falls, and we were again with the main party which had preceded us to Kanawyer's at the junction of Copper Creek and the Kings River.

We remained five days at Copper Creek. It was such a delightful camp, with its memories of former outings, that we hated to abandon it. The camp stretched along the river bank, as busy at certain hours of the day as the sacred banks of the Ganges. Washing, pulling up water in buckets and other housekeeping duties here went merrily on; fishing and afternoon tea parties were held, and last, but not least, every afternoon the famous swimming parties at the big rock.

Many side attractions in the form of one-day trips kept us in active training. Roaring River Falls were three miles away, Granite Creek, two miles, and Sentinel Rock, with its superior view, towered above us. I must not omit to mention the famous two-day trip of three of our best mountaineers to Colby Pass, a newly discovered crossing of the Kings-Kern Divide, in the neighborhood of Milestone.

RAE LAKE FROM LOWER END, 1913.
Photo by Lena M. Redington.

Unwillingly we brought to an end our delightful stay at this South Fork camp. The climb out, up the Copper Creek-Granite Basin trail—a rise of 6,000 feet—had been described as something to be dreaded, but, like all zigzagging, it was more monotonous than difficult. However, no climb can be very monotonous which unfolds such admirable views of distant valleys and peaks. Here we overlooked Sentinel Dome, Avalanche Peak, the Sphinx and Bubb's Creek. This landscape gave way to delightful spaces of red fir forest, which in turn began to thin out into granite boulders. Flocks of Mr. Muir's "hoofed locusts" met us here, driven by the usual Basque herders. By noon we were at Granite Basin, a beautiful camp though very cold, the only stop between the South Fork Cañon and Simpson Meadows.

Those who wished made the ascent of Goat Mountain, an excellent view point, since it stands conspicuously alone in the center of a circle of lofty peaks that form the rim of vision. The next day the party descended over 5,000 feet in elevation to Simpson Meadows, where a permanent camp was established for eleven days.

One of the most wonderful natural gardens in the Sierra is in Simpson Meadows. The Middle Fork of the Kings River rushes by. In the open, fern braes are mingled with a luxuriant growth of flowers whose fragrance greets one in advance. Ladies' tresses, elephant's heads, tiger lilies, larkspur, wild roses, wood violets, all these most delicate flowers are there, either mixed with ferns or alone in beds by themselves. Out beyond are picturesque groupings of pines framing views of Mt. Woodworth, 12,214 feet, and the Goddard Cañon. Our camp was conveniently installed on numerously branching streams, so numerous as to cause more than one person to stray by night beyond his bourne.

Beautiful as was our meadow it could not restrain the restless mountain climbers. The first morning's excitement centered around a pine on which were posted the lists for the side-trips scheduled to leave for Mt. Woodworth, Marion Lake and the North Palisade.

The less said about the many wet days that followed the better, though merry were the post-campfire ceremonies of

GRANITE BASIN, LOOKING BACK FROM PASS, 1913.
Photo by Violet Ehrman.

TRIPLE FALL, CARTRIDGE CREEK.
Photo by Louis Jensen, Shaver.
Print by C. R. Clendenning, Big Creek.

DEVILS CRAGS FROM NEAR WOODWORTH MT.
Photo by J. N. Le Conte.

DEVILS CRAGS.
Photo by Lena M. Redington.

drying out wet sleeping-bags and wearing apparel. In spite of the rain we started forth on our side-trips in three divisions. The Triple Falls brigade was to stay three nights at the falls on Cartridge Creek, making daily trips to points of interest. Another party went to Marion Lake and crossed into the Palisade Basin and visited Grouse Valley, and a third, the picked mountaineers, attempted the difficult and dangerous climb of the North Palisade (14,254 feet). The first night we all camped together up Cartridge Creek Cañon at Triple Falls. Next day we separated to go our various ways. It would take too long to relate the details of the trip to the Palisade Lake Basin, the long snow and ice slide, the magnificent storm clouds, the dead tree which we set on fire and which fell in the night among the sleeping bags, the incessant rain which at first seemed to succeed in defeating the project of gaining the summit, then the safe ascent of all those who waited over an extra day to try again.

About this time hearts began to grow heavy, for the end of the outing was drawing near. Only the four days' trip to Shaver was left and the 1913 outing would be over. These days were unsurpassed in beauty by any other part of the trip. The first night's camp was in Tehipite Valley with its wonderful cliffs and pinnacles and great dome, rising nearly 4,000 feet in the air above the floor of the valley. The rain need not be mentioned since everybody but the photographers had grown used to it by this time. While we have always, while travelling in the Sierra, prepared for a passing thunder shower, we never dreamed that it could rain so many days in succession, and at all hours of the day and night. The photographers sat with cameras poised, waiting for the dome to smile through the clouds which enveloped its cap, while the rest of us enjoyed the fleecy bits of cottony whiteness that floated from pinnacle to pinnacle.

The following day the steep climb out of Tehipite Valley made heavy demands upon suitable adjectives to express the artistic Japanesque effects of odd fir trees, blackly silhouetted against a white background of fog, or of logs and rocks which took on weird forms. Mystery surrounded even the most intimate friends, while distressed calls from lost sisters were

heard above the drip, drip, drip of the pine boughs. This was Gnat Meadow, which seemed the veritable home of the clouds.

House Meadow lay eighteen miles beyond Gnat Meadow. The swimming in the North Fork of the Kings River was excellent and restful, so that by the time we had passed through the exquisite bit of forest and meadow left for the late afternoon, we arrived in good condition at the driest camp we had seen for some time.

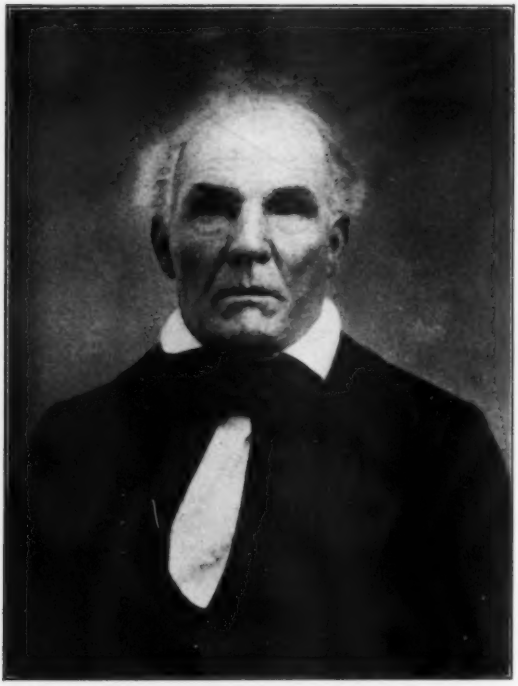
En route to the next camp most of the party went through the McKinley Grove of Big Trees. Some rangers had volunteered to lead the march in order that we might not stray off on the various cattle trails. A line was formed about one hundred and fifty strong, or rather long, since the march was made in single file. Jokes and badinage passed up and down from one end of the line to the other until the grove was reached. The grove is typical of the Big Tree groves and the specimens numerous and of perfect form.

At Glenn Meadow, the last night's camp, we had to forego the pleasure of a camp fire because of the early start necessary next morning. It was not that the trip to Shaver was so long, only twelve miles, but the packers had to have the dunnage bags early in order to get down to Stevenson's Creek at half after ten, the time scheduled for departure on our special train. Shaver was surprised at eight o'clock in the morning by the unexpected descent upon it of the members of our party.

Down a steep trail, four miles beyond, was Stevenson's Creek, near the terminus of the San Joaquin and Eastern Railway. Civilization which we had left so far behind on the other side of the Sierra was meeting us again. We survived the excitement of the moving picture company, which photographed us; we enjoyed the expansive but warm foothill views, until finally Fresno came all too soon, and then a night in the train and we were back in town.

And now there often comes a longing to return to those pleasant spots—a longing which brings with it memories that are as refreshing as a cool, fragrant breeze from far-away mountain summits.

FORESTS AND CLOUDS NEAR GLENN MEADOW, 1913.



CAPTAIN JOSEPH REDDEFORD WALKER.

No portrait of Walker has hitherto been published so far as known to the writer. He is buried in Martinez Cemetery, and the date of his over-night camp in Yosemite Valley is taken from the monument over his grave. The portrait is from a daguerreotype in possession of Mrs. Mary Vaughan Walker, of Walnut Creek, California, by whose courtesy the reproduction is made.

Various rare books, maps and manuscripts in the Bancroft Collection of the University of California Library have been consulted.

For assistance in locating rare books, maps and manuscripts acknowledgments are made to Mr. H. I. Priestley, Assistant Curator of the Bancroft Collection.

FIRST ACROSS THE SIERRA NEVADA

By Willis Linn Jepson

In the year 1832 Captain B. L. E. Bonneville of the United States Army secured leave of absence from the War Department for the purpose of conducting on his own account an exploring and trapping expedition in the Rocky Mountains. As lieutenant in charge of a portion of his command was Joseph Walker, who had already achieved fame as a frontiersman. The expedition wintered in the Rocky Mountains on Green River, and the next year half of the party under Bonneville made an exploring trip northward. The other half under Walker was, according to Bonneville's account,[1] sent to explore the country on the western side of the Great Salt Lake. At the time, however, of organizing the Walker party at the rendezvous, it was well known, as it now seems to us, that the objective point of the party would probably be California, if, indeed, that decision had not definitely been reached.[2]

The country to the west of Great Salt Lake had never been traversed by white men. It was a terrifying and unknown region, a vast desert waste where men might easily perish in a short time for lack of water, where afterwards thousands did so perish. Scarcely anything was known of it in any respect. Men who had penetrated as far as the Rocky Mountains, trappers and explorers, merely knew that it was poorly watered and of great extent, that somewhere to the westward of it was the Pacific Ocean, and that along the shores of the Pacific lay a narrow strip called California, concerning which there were wonderful stories narrated at the campfires of the trappers.

[1] Washington Irving, "The Rocky Mountains," Vol. I, p. 210; Vol. II, chs. 13 and 14. (Philadelphia, 1837.) The second edition was entitled, "The Adventures of Captain Bonneville, U. S. A., in the Rocky Mountains and the Far West." (New York, 1849.) See the accompanying map.

[2] Joseph Nidever joined the Walker party at Green River for the express purpose of coming to California. Had there been any doubt on this matter he would obviously, as Bancroft points out, have mentioned the fact in his journal. Nidever says: "In the spring there was a large number of trappers gathered at the rendezvous in Green River Valley, and among them Captain Walker and company, bound for California. We joined him, making in all thirty-six." (See Nidever, "Life and Adventures," MS., p. 58, Bancroft Collection.)

Across the gaunt deserts of the Great Basin Walker led his party, following down Mary's River,[3] afterwards called the Humboldt, discovering rivers and a chain of lakes,[4] and finding the course of all streams westward barred by a great north and south mountain barrier, the "Snowy Range," its crest of great height and unbroken by any low pass or river gorge. Walker scaled this range, the Sierra Nevada, being the first white man across it, descended the western slope along or near the waters of the Merced River,[5] discovered[6] and camped in Yosemite Valley, November 13, 1833, and passed the following winter in winter quarters at Monterey, the Mexican capital of Alta California.

The following spring Walker returned with his party to the rendezvous in the Rocky Mountains, following essentially the same route except that he passed out of the San Joaquin by way of Walker's Pass in the southern Sierra Nevada. This accomplishment was a great exploit in western exploration and Walker rejoined Bonneville after a highly successful trip. For the first time the vast desert of the Great Basin had been conquered, many lakes and rivers had been discovered, and it had been determined that the Sierra Nevada rose as an unbroken wall barring the western way for many hundreds of miles north and south. Most important was Walker's discovery that no river, the "Buenaventura" or any other, had its source or headwaters at the Great Salt Lake and emptied into San Francisco Bay or the Pacific Ocean, as represented on all the maps of the times.[7] All these important facts in geography are shown on the map[8] accompanying the first and second editions of the narrative of the Adventures of Captain Bonneville by Washington Irving. The results of the California expedition are, obviously, to be placed primarily to the credit of Walker.

---

[3] cf. Bancroft, "History of California," Vol. III, pp. 389-392.

[4] Humboldt Lake, Walker Lake, Walker River, Mono Lake, etc.

[5] Nidever, l. c., p. 62.

[6] Appleton's Cycl. Am. Biog., Vol. VI, p. 328. Munro-Fraser, "History of Contra Costa County," pp. 688-690 (1882).

[7] Compare, for example, Col. J. J. Aberts' U. S. Map of Oregon Territory, 1838.

[8] Bonneville's map, which is reproduced in the Pacific Railroad Reports, Vol. XI, plate 4, gives the first generally accurate view of the courses of the Sacramento and the San Joaquin rivers, of the Humboldt River and its series of lakes, and of the land-locked character of the Great Salt Lake.

There is, however, a curious bit of misrepresentation connected with these events. Through Irving as a mouthpiece, Bonneville is made to condemn the expedition to California in the severest terms. While Walker is not actually condemned by name, the heaviest censure in respect to disobedience and incapacity is passed upon the expedition as a whole. The injustice of this attack will appear presently. First of all it should be remembered that Bonneville was a man of marvelous egotism and that probably he had private reasons for this outbreak.

That the Walker expedition had great consequences may readily be appreciated. It first dared to take the risks and face the dangers of the Great Basin deserts, it blazed a way to California and opened up a path for the Fremont expeditions, and for all those subsequent scientific and exploring expeditions which followed closely on the heels of Fremont, including the Pacific Railroad surveys. It is, indeed, just at the time of the Pacific Railroad surveys that we get an understanding ray of light on Bonneville's attack on the California expedition. Bonneville writes a letter which is intended to illuminate Bonneville,—and it does so, but not in the way that the writer of it intended. The time had now come when the Fremont and other expeditions to California had called attention to the importance of the first expedition from the Great Salt Lake across the deserts to California, and people were beginning to make definite inquiries regarding it. The letter in question is addressed to Lieutenant G. K. Warren, U. S. A., of the Pacific Railroad surveys. In this letter[9] the expedition to Cali-

[9] Letter to Lieutenant G. K. Warren, U. S. A., from Colonel Bonneville, dated Gila River, New Mexico (Ariz.), August 24, 1857. It reads in part as follows: "On the map you send I recognize my names of rivers, of Indian tribes, Mary's or Marias River, running southwest, ending in a long chain of flat lakes, never before on any map, and the record of the battle between my party and the Indians, when twenty-five were killed. This party clambered over the California range, were lost in it for twenty days, and entered the open locality to the west not far from Monterey, where they wintered. In the spring they went south from Monterey, and turned the southern point of the California range to enter the Great Western Basin. On all the maps of those days the Great Salt Lake had two great outlets to the Pacific Ocean; one of these was the Buenaventura River, which was supposed to head there. . . . It was from my explorations and those of my party alone that it was ascertained that this lake had no outlet; that the California range *basined* all the waters of its eastern slope without further outlet; that the Buenaventura and all other California streams drained only the western slope."—Warren's Memoir (Pac. R. Rep., Vol. XI, pp. 33-34, 1859). See, also, footnote 8, supra. Contrast the foregoing encomium of the California expedition with Bonneville's violent censure, twenty years previously, of "this most disgraceful expedition." (Irving, "The Rocky Mountains," Vol. I, p. 144. 1837.)

fornia has now become a highly praiseworthy undertaking; Bonneville cheerfully takes to himself all the credit for it and does not mention Walker at all!

Joseph Walker was a product of those times and conditions of the western country which gave us a group of frontiersmen of very exceptional character. General Christopher ("Kit") Carson, William Sublette, James Bridger and many others were celebrated names, contemporaries of Walker. In one respect Walker was the superior of all frontiersmen of his time, namely, in his extraordinary powers of judging country from a distance. This is a quality that is obviously of great importance to the explorer. It was with Walker a special talent to view a region at a long distance, determine the best route across it, its general and special topography with reference to mountain passes, gradients and stream flow, and its capacity to sustain a party largely or wholly dependent for sustenance upon the country in the matter of water, of game, of grass and of wood.[10] It was undoubtedly to these gifts that the success of the California expedition was primarily due. The success of the feat otherwise must be credited to Walker's leadership.

This first expedition to California across the great interior desert, the first passage of the Sierra Nevada by white men, and the discovery of Yosemite Valley, have been largely neglected by students of western and California history. Doubtless the subject would repay investigation by the specialist. One source of information may be mentioned. The original journal of Captain Bonneville is now in the possession of Mr. W. C. Breckenridge, of St. Louis. This gentleman is a highly informed student of western exploration and it is to be hoped he may some time publish a full and faithful account of the contents of the Bonneville diary.

The group of frontiersmen to which Walker belonged were, as a whole, not versed in the schools, and the idea of preserving a narrative of their explorations was quite remote to them. They had a high sense of duty, of complete sacrifice to a great venture, and a wonderful passion for the trails and rivers of

[10] He [Joseph Walker] was one of the best leaders I have ever met, a good hunter and trapper, thoroughly versed in Indian signs and possessed of a good knowledge of the mountains. He could find water quicker than any man I ever met."—Nidever, "Life and Adventures," MS., p. 62.

the western mountains, but they were as innocent of posthumous fame as the tribes of savage Indians whom they fought. It now seems a pity that they did not have coursing in their veins a few drops of New England blood, since a full narrative of their journeys and achievements would fire the senses and stir the imagination concerning a country which is still rich and warm for detailed exploration. Such regrets regarding such men are, however, idle. They lived, it must be said, in and for their day,—for the pure zest of adventure and the pure joy of exploration.

MUIR LODGE IN THE SIERRA MADRE MOUNTAINS

By A. Martha Walker

The rapidly increasing interest in our local walks in the vicinity of Los Angeles is bringing many people to know our own mountains. That we do have beautiful mountains, within easy reach, many do not know. Mt. Lowe and Mt. Wilson (6,000 feet), the nearest, loom up daily before the ordinary eye of the people of Los Angeles and beckon with their white shining trails, even at the distance of twenty miles. Farther east, "Old Baldy's" snowy crest (10,080 feet) is a familiar sight in winter, while Greyback and San Jacinto, both over 13,000 feet, are the monarchs of the range. These mountains are especially adapted to winter walks. When snow does fall on Mt. Lowe or Mt. Wilson, it is only an added attraction. One of our best trips last winter included seven miles on the sky line from Mt. Wilson to Mt. Lowe, over a trail that was covered with snow six to ten inches deep. That was a two days' trip and we spent the night at the Mt. Wilson Hotel, on the summit. Another memorable trip was with sleeping-bags and burros up Mt. Lowe and down via Switzer's Camp, when the yucca was in full bloom on the upper mountain slopes.

As the result of this increased interest in mountain climbs and walks, the Club has felt the need of a mountain home. The site selected is six miles from the town of Sierra Madre, which is one hour's ride from Los Angeles by the electric cars. The easy zig-zag trail leads for four miles up the east slopes of Mt. Wilson and then follows for two miles up the Big Santa Anita Cañon, crossing the stream at intervals. On the way up, beautiful views are constantly to be had back over the foothills and the San Gabriel Valley to the sea. The dreamy, hazy atmosphere, filling the cañons and softening the mountain slopes, casts a spell all its own on the traveler. In the cañon the stream hurries along by huge boulders, amidst banks of giant woodwardia ferns. Many beautiful cabins have been built throughout the cañon.

MUIR LODGE, SANTA ANITA CAÑON, 1913.
Photo by C. J. Fox.

INTERIOR OF MUIR LODGE, 1913.
Photo by C. J. Fox.

The lodge is built on three Government sites, leased from year to year. Back of it are large spreading live-oaks, while in the front is the stream with its islands, covered with alders and sycamores. The new trail continues on for about five miles, to the top of Mt. Wilson. The first day that the site was selected, each person helped to start the "building fund" in earnest by carrying up from the bed of the stream his quota of stones. From that time the Building Committee worked earnestly and the chairman of the committee unselfishly devoted his entire summer vacation to the work.

Getting the lumber carried up by burros was one of the many interesting problems. By constant effort, the secretary of the committee succeeded in getting splendid contributors to the fund. In the autumn, we were invited to be present at the dedication of Muir Lodge, October 4th and 5th. A few of us were fortunate enough to be present the Saturday before the dedication, and could see the actual work of construction. That day the locker-seats and the doors received their coat of paint; the pictures were hung, and the rustic oak table completed, while outside the shovel and wheelbarrow brigade kept busy. All this was skilled, but unpaid labor. The lodge, all of stone, is 20 by 48 feet, and has a large granite fireplace. The living-room is 20 by 35 feet, while the kitchen and a small locker-room take up the rest.

The cost of the lodge in cash was $1,350. The contract for mason work was the largest item. Long-term rental of the forty lockers, many more of which are to be provided, helped the fund. The Building Committee is pleased to announce that it has been all paid for by members of the Club, although no assessments were levied. Further assistance has been given by the Directors allowing a part of the fee of all new members joining the Club through our efforts up to December 1st. The furnishings were all donated by members and friends. The dark-green corduroy cushions on the wide locker-seats, useful also as beds, the pictures, rocking-chairs and rugs make it a truly homelike lodge. It is a particular joy to see hanging over the mantel the splendid autograph portrait of Mr. Muir. It was fitting that the lodge should be named after one who has pointed the way to the heights to "get their good tidings."

On the evening of the dedication one hundred and eighty people met in the lodge, as one happy family, to hear music and speeches. It was a dignified and earnest body of people assembled there, who knew that they were glad to belong to an organization that was really worth while—one that had accomplished much and gave promise of greater things to come. The next morning, a beautiful Sabbath, a veteran Club member acting as chaplain, dedication services were held and two little trees were planted, in the hope that they might "like their neighbors"—*Sequoia gigantea* and *Sequoia sempervirens*.

The lodge is a good starting-point for a trip up Mt. Wilson and over to Mt. Lowe, or farther back into the West Fork of the San Gabriel River. It is hoped that all the members of the Sierra Club and their friends will come to visit and to enjoy this, their new mountain home. The lodge is open the "year round," the key being easily obtainable by members at the foot of the trail.

SIERRA CLUB BULLETIN.

PUBLISHED JANUARY AND JUNE OF EACH YEAR.

Published for Members. Annual Dues, $3.00.

The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

ORGANIZATION FOR THE YEAR 1913-1914

Board of Directors.

Mr. JOHN MUIR (Martinez) .....*President*
Prof. J. N. LE CONTE (Berkeley) .....*Treasurer*
Mr. WM. E. COLBY (Mills Building, S. F.) .....*Secretary*
Prof. WILLIAM FREDERIC BADÈ (Berkeley).
Prof. E. C. FRANKLIN (Stanford University), *vice* Prof. A. G. MCADIE, resigned.
Prof. VERNON L. KELLOGG (Stanford University).
Mr. EDWARD T. PARSONS (Berkeley).
Mr. WILLOUGHBY RODMAN (Los Angeles).
Mr. CLAIR S. TAPPAAN (Los Angeles).

Honorary Vice-Presidents.

Hon. JAMES BRYCE (British Embassy, Washington, D. C.).
Mr. HENRY S. GRAVES (Washington, D. C.).
Mr. ROBERT UNDERWOOD JOHNSON (New York).
President DAVID STARR JORDAN (Stanford University).
Mr. J. HORACE MCFARLAND (Harrisburg, Pa.).
Prof. A. G. MCADIE (Harvard University).

Editorial Board.

Prof. WM. F. BADÈ (Berkeley) .....*Editor*
Mr. WM. E. COLBY (Berkeley) .....*Notes and Correspondence*
Mrs. E. T. PARSONS (Berkeley) .....*Book Reviews*
Mr. A. H. ALLEN (Berkeley), Mr. ELLIOTT MCALLISTER, Mr. EDWARD T. PARSONS, Prof. H. W. ROLFE (Stanford Univ.), Prof. J. E. CHURCH, JR. (Reno), Prof. J. N. LE CONTE.

Auditing Committee.—Directors FRANKLIN, BADÈ, and TAPPAAN.

Outing Committee—Mr. WM. E. COLBY (*Chairman and Manager*), Mr. J. N. LE CONTE, Mr. EDWARD T. PARSONS, Mr. CLAIR S. TAPPAAN (Los Angeles, *Assistant Manager*).

Committee on Local Walks—Mr. J. E. ROTHER (*Chairman*), Mr. HAROLD FRENCH, Mr. C. W. POHLMANN, Mr. GEO. EDWARDS, Mr. FRED R. PARKER.

Le Conte Memorial Lodge Committee.—Mr. E. T. PARSONS (*Chairman*), Prof. J. N. LE CONTE, Miss LYDIA ATTERBURY.

Librarian—Miss N. TAGGARD.

Executive Committee, Southern California, Section 1913-1914—Mr. EVERETT SHEPARDSON (*Chairman*), Mr. PHIL. S. BERNAYS (*Secretary*), Mr. CHAS. A. FOX (*Treasurer*), Mr. H. E. BAILEY, Mr. C. S. TAPPAAN, Los Angeles; Miss MARY KELLOGG, Pasadena; Miss EDITH STEINBERGER, Sierra Madre; Dr. GEO. A. WHITE, Santa Barbara; Mr. CHAS. P. DOUGLASS, San Diego.

EDITORIALS

THE HETCH-HETCHY SITUATION

The press of the country is almost unanimously of the opinion that a perilous precedent has been set by the passage of the Raker Hetch-Hetchy bill. It is the first time that permission has been given to a municipality to invade a national park. Had this been done under spur of a real public necessity it would not be a serious matter. The Sierra Club has always stood ready to approve the diversion of any part of the Yosemite National Park if it could be shown that it is the only place from which San Francisco can derive a satisfactory supply of water. But the Board of Army Engineers, in passing judgment upon evidence collected by the city for the express purpose of showing the necessity of the project, found that "there are several sources of water supply that could be obtained and used by the city of San Francisco and adjacent communities to supplement the nearby supplies as necessity develops." They add further that the water "from any one of these sources is sufficient in quantity and is, or can be made, suitable in quality. * * * The determining factor is one of cost." Since the truth of these statements is unquestioned the passage of the Hetch-Hetchy bill must be regarded as the first act in a movement to break down our national park policy, and to expose the parks to commercial exploitation by municipal politicians and engineers.

When the Park was established in 1890 the committee reporting the bill said: "The rapid increase of population and the resulting destruction of natural objects make it incumbent upon the Government, in so far as may be, to preserve the wonders and beauties of our country from injury and destruction in order that they may afford pleasure as well as instruction to the people." As watchful guardians of the people's playgrounds, Secretaries Hitchcock and Noble condemned the project as subversive of the purposes for which the Park was established. One Public Lands Committee after another did the same. But the project was kept alive, under one pretext or another, in anticipation of a more favorable political wind. Last summer the city's representatives entered into an agreement with the representatives of the Turlock and Modesto irrigationists, which however was never confirmed by their principals, and then the Hetch-Hetchy bill was adroitly "caucused" and agitated as a party measure. During the summer session the measure was rushed through the lower house, chiefly on the misrepresentation that a water famine was impending. The absurdity of this plea is apparent in the fact that water enough for two years was on hand; that the Calaveras dam, now in course of construction, is designed to provide for the need of decades to come, and

that from eight to twelve years would be required for the construction of a Sierra water system.

The irrigationists discovered later that the bill to which their representatives had rashly given their assent, condemns large areas of irrigable lands to permanent aridity, and may ultimately deprive them even of the waters to which they thought they had legal claim. In any case, by investigations of the Conservation Commission of the State of California (Report 1912), the State Water Commission (Report 1912), the Irrigation Resources Investigations of the U. S. Agricultural Department (Bulletin 254), and the records of Annual Runoff of the Tuolumne, it is shown to be certain that there is not as much water as the city and the irrigationists together claim for their future needs. Quite apart, therefore, from the destructive effect of the project upon the scenic values of the Park, so conclusively set forth by Frederick Law Olmsted, the Hetch-Hetchy bill is unquestionably open to the charge of being an anti-conservation measure.

As every one knows, the hope of California's greatness lies in the agricultural development of her great central basin. This development is impossible without water. Yet the present bill proposes to divert for metropolitan needs, easily satisfiable from other sources, waters without which vast areas of wealth-producing land must remain as worthless as a desert. The bill is vulnerable on the legal side because it attempts to exercise federal control over the distribution of waters within a sovereign state. Measures are already being taken by the irrigationists to test these assumptions of the bill in the courts. But of more fundamental importance is the question of public policy involved. Suppose a city is short-sighted enough to undertake to destroy, quite needlessly as in this case, the agricultural possibilities of a region upon which its own future development in large part depends. Ought the federal government to become a party to such a project?

Now that the bill has been passed it is beginning to be seen that the amount which the city is supposed to save is not nearly as great as the nation and the San Joaquin Valley loses. The political wisdom of this scheme is comparable to the famous Scalp Act of Pennsylvania by which the state paid $90,000 for the killing of hawks and owls in order to save chicken-breeding farmers a loss of $1,875. Presently it was discovered, through investigations of the Department of Agriculture, that by the killing of the above-mentioned natural enemies of rodents a contingent loss of nearly four million dollars had been inflicted on the agricultural interests of the state. The absurd law was promptly repealed, but not until irreparable damage had been done.

Senator John D. Works, of California, has introduced in the Senate a bill to repeal the Hetch Hetchy legislation, and in his vigorous remarks accompanying the same sets forth the points on which he justifies his action. A thorough investigation of his presentation is to be hoped for, as the truth is all that those honestly on either side of the question can properly demand.

We concur in the view of one of our correspondents that "the labors of the various public-spirited individuals and civic organizations who worked to this end [to prevent this legislation] have not been in vain. The widespread and vigorous expressions of public sentiment in the press and elsewhere in opposition to the unnecessary invasion of the National Parks for commercial and utilitarian projects has been of permanent value in making similar projects more difficult if not impossible in the future, and our National Parks as a whole are more secure as a result of the Hetch-Hetchy fight." W. F. B.

Wild Life Conservation It is to be regarded as one of the triumphs of an aroused public sentiment that the lobby of the feather importers did not succeed in running its steam roller through the United States Senate last summer. Through the efforts of numerous public-spirited organizations a carefully worded paragraph was introduced into the tariff bill, prohibiting the importation of the aigrettes, plumes, and feathers of all wild birds. Through the efforts of the lobby the Sub-committee on Finance was induced to report an amendment which exempted "the feathers or plumes of birds commonly recognized as edible or pestiferous." The best legal authorities on custom house procedure gave it as their opinion that under such a clause the plumage of every bird species in the world might be imported! A campaign was immediately inaugurated by the New York Zoological Society and the National Audubon Societies, ably supported by numerous local and State organizations. The California Associated Societies, of which the Sierra Club is a representative member, conducted a vigorous campaign from this side of the continent. The result was that the champions of the feather importers were routed, and the original text of the measure was adopted.

It is interesting to note that just ten days after the signing of the tariff law by the President the London feather market suffered a tremendous decline. This indicates that, with our ports tightly closed, the enormous numbers of birds usually slaughtered for the American market will not be killed. The Director of the New York Zoological Park has addressed to the Royal Zoological Society of Amsterdam a memorial urging it to induce the Dutch Government to forbid by imperial decree all exportation of wild birds' plumage from the islands of the Dutch East Indies. Our readers are referred to an interesting communication, in the Notes and Correspondence, from the Paris Society for the Protection of Animals.

An attempt is being made to impugn the constitutionality of the Federal migratory bird law, which was enacted last spring. It seems unlikely, however, that the legal soundness of the measure can be successfully challenged. Birds which, owing to their migratory habits, are not native to any one State or section, are clearly amenable to Federal protection. W. F. B.

ELIMINATION OF PRIVATE HOLDINGS IN NATIONAL PARKS BY EXCHANGE FOR FOREST LANDS

For many years the Sierra Club has advocated the exchange of patented areas existing within the borders of National Parks for public lands of equal monetary value, but unimportant from a scenic standpoint and existing outside of the parks. It has been impossible to induce Congress to purchase outright these private holdings, which in many instances have seriously interfered with the proper administration of the National Parks. The only feasible plan seems to be that suggested, of exchange for other lands owned by the Government. This should be done without further delay. A bill has been introduced in Congress and is now pending before the Public Lands Committee of the House, providing for the exchange of the privately owned tracts of land within the Yosemite National Park and containing a superb growth of sugar pine and yellow pine and other magnificent forest trees, and extending along the Wawona Road connecting the Yosemite Valley and Mariposa Grove of Big Trees. In lieu of this land, which should belong to the Government and be retained in its original condition within the Park, it is proposed to give land outside of the Park containing a stand of timber of equal value. The Yosemite Lumber Company has agreed to this exchange and the Forest Service has made the necessary estimates and the Park administration favors the exchange. There is no good reason why this bill should not become a law except inertia. The Public Lands Committees of the House of Representatives and of the Senate, Washington, D. C., should each be separately urged by all who have the welfare of the National Parks at heart, to act favorably on this bill, which is H. R. No. 12,533. Write now to your representatives in Congress, before you have a chance to forget. Unless the bill passes soon, the lumber company will, for economic reasons, be compelled to commence cutting. While you are writing, urge an exchange of the same character to be made to preserve the wonderful forest along the road to Signal Peak near Wawona and along the Big Oak Flat Road within the Yosemite National Park, leading into the Yosemite Valley from the north.

W. E. C.

EXCHANGE OF STUMPAGE FOR CUT-OVER LANDS WITHIN NATIONAL FORESTS

Another proposal which appeals to one as being admirable is that of exchanging standing timber on forest lands owned by the Government for privately owned lands from which the timber has already been, or will be cut. Of course, the cut-over lands have little present value and the Government should be able to secure them for a comparatively small amount of standing timber in exchange, which would represent the present value of these cut-over lands.

The officials of the Forest Service can doubtless work out some sort of an equitable basis for such exchange. This plan has many excellent

features to recommend it. There are in the National Forests many private holdings which checker-board the Government ownership. This exchange plan will enable the Government and also the private owners to consolidate their forest holdings and thus administer and cut them with greatest economy to all concerned. Such a plan of exchange will enable the Government to gradually acquire title to all of the private holdings in the National Forests and thus remove many of its troublesome fire dangers and increase the efficiency of its administration of the forests. The cut-over lands will be more efficiently cared for by the Government, with a view to promoting a new growth of timber, and the stumpage they give in exchange will be cut in accordance with the most approved methods and left in the best possible condition to insure a second growth, the Government retaining the title to those lands also and only exchanging the timber growing on them.

The private owner is not ordinarily in any position to care for his cut-over land and protect it from danger of fire, which is unusually destructive to the new and small growth. The Government is in a position to care for this land much more effectively than the private owner, who usually has not the same interest and concern for the future of the forests. The Government can also impose reasonable restrictions on the cutting of the uncut private lands to be later taken over by the Government in exchange for stumpage, and thus receive this cut-over land in the best possible condition, having future growth in view. Before anything can be accomplished along these lines, Congressional action will be necessary. Those favoring such action should write the Forest Service, Washington, D. C., urging that this plan of exchange of stumpage for cut-over lands be investigated and the policy urged upon Congress if found feasible and desirable from the Forest Service standpoint. W. E. C.

The Panama-Pacific Exposition

Undoubtedly many members of Alpine Clubs and kindred organizations will visit the World's Panama-Pacific Exposition to be held in San Francisco in 1915. The Sierra Club desires to take this early opportunity to invite such visitors to make the Sierra Club rooms, 402 Mills Building, San Francisco, their headquarters. A register will be kept there so that mountaineers from abroad or the East may be able to meet. Any who wish to visit Yosemite or other points of interest in the Sierra Nevada will find at the Sierra Club rooms the most accurate and reliable information, which will be freely placed at their disposal. This Club also hopes to establish a camp in the Tuolumne Meadows, the most central camp-ground in the Yosemite National Park. This camp will be open during the summer season and is intended to afford accomodations to our mountaineering brethren at cost. Publications of other alpine clubs will please copy the foregoing. W. E. C.

REPORTS OF COMMITTEES

Report of Outing Committee, 1913 Outing

The 1913 Outing was the most ambitious outing in point of difficulty ever undertaken by the Club. Encouraged by the success of crossing the Sierra Range from west to east in 1912, the plan was reversed in 1913 and the special Pullman trains from Los Angeles and San Francisco were joined at Mojave and ran to Owenyo, the broad gauge terminus in Owens Valley on the eastern side of the Sierra. The narrow gauge then took the party a few miles further to Citrus, where conveyances transported us to Independence for luncheon.

That afternoon we reached the first night's campsite in Pine Cañon. The next day's trip involved a climb of nearly 6000 feet over Kearsarge Pass on the crest of the Sierra and then dropping down to camp at Vidette Meadows. A large number of saddle horses had been provided at Independence for that day, to aid in making the ascent, which proved to have been a wise provision. Another year this tedious ascent coming so early in the trip had better be broken and camp made at Onion Valley, half way to the Pass.

Never before did a Sierra Club outing party arrive so suddenly and so early in the trip in the midst of such grand and inspiring High Sierra scenery.

University Peak, Mt. Brewer, Center Peak, and other nearby summits were ascended and shorter trips made to Charlotte, Vidette and Center Basin Lakes. Knapsack parties totaling over fifty in all made the glorious circuit over Glenn Pass to Rae Lake and then down Woods Creek into Paradise Valley, and finally rejoining the main party, which had meanwhile gone down Bubb's Creek into the main Kings River Cañon or "South Fork Yosemite." The few days spent here were busy ones. Swimming, picnic parties to Mist Falls and Roaring River Falls, the climb of the Grand Sentinel, and preparing for the great feature of the outing—the trip into the Middle Fork—occupied the time.

Leaving Kings River Cañon by the Copper Creek trail, the party climbed 6000 feet to camp in Granite Basin. The next day the party descended into the Middle Fork Cañon and camped at Simpson Meadows —famed for its wild flower gardens and beautiful groups of trees, enclosed by stupendous cañon walls—among the highest in the whole Sierra. Trips were taken up Goddard Creek to Mt. Goddard, to Triple Falls, Marion Lake, and two members of the party visited Bench Lake, where the golden trout planted under the direction of the Club in 1910 were found to have attained a weight of two or three pounds.

About sixty members knapsacked via Triple Falls and Observation Peak into the seldom visited Palisade Basin—a wonderful combination of the wildest and most rugged region of the entire Sierra, with the jagged Palisade range over 14,000 feet in elevation towering to the east, and the most charming and picturesque meadow and garden spots along its main stream.

Fifteen members climbed the north Palisade (14,254 feet), being the second time it has ever been ascended. Mr. Chas. Michael made the first ascent of the highest of the Devil's Crags (12,612 feet). Most of these knapsackers visited Grouse Valley, which is another wonder-spot of the Sierra—sculptured walls rising Yosemite-like from a flowery meadow, through which the main river winds with sinuous curves. From Palisade Creek to Cartridge Creek the various parties found it rather strenuous going—reminding one of the Tuolumne Cañon, not alone because of the difficulties of travel, but also because of the stupendous cliffs and exquisite cascades and falls of the river. It will interest our members to learn that steps have already been taken by the Club, in co-operation with Fresno County and the Forest Service, to build a trail up this gorge, thus making Grouse Valley and Palisade Basin accessible with pack animals, from the west.

Regretfully leaving Simpson Meadows, the entire party descended the Middle Fork Cañon to Tehipite Valley—next to Yosemite and Hetch Hetchy the finest example of the Yosemite type of valleys in the Sierra. Lack of feed for animals prevented a longer stay and the next day the party climbed to Gnat Meadows, which was completely enveloped in clouds, and camped in a splendid forest of red fir. Camps at House and Glenn Meadows followed, and passing through Shaver, the party while still in the pine forests, boarded the special train of the San Joaquin and Eastern Railroad, and the thirteenth annual outing was practically over.

Considering the great difficulties of provisioning and transporting the baggage of so large a party through such rough and unfrequented territory—first crossing the crest of the Sierra and then ridges and cañons that few private parties have the hardihood to undertake—this outing stands out as being the most ambitious and at the same time successful of any in the history of the Club. There were 200 members in the main party, and unfortunately many who applied late could not be accommodated. Counting assistants and camp help, the party numbered nearly 240. The Club followed its plan of the two years previous, and in co-operation with Fresno County and the Forest Service, hired a crew of six trail men, who traveled in advance of the Club and repaired the extremely rough trails in this region. They were left in better condition than they have ever been. The Club is indebted and acknowledges its appreciation to the Supervisors of Fresno County, Mr. J. E. Eibeshutz and friends of Independence, and to Mr. Paul G. Redington, Supervisor of the Sierra National Forest, for their part in making the outing such a great success. In spite of the unusual amount of rain encountered last summer, something very exceptional in the Sierra, we shall look forward eagerly to the day when we shall revisit this wonderfully attractive portion of the Sierra.

Respectfully submitted, WM. E. COLBY, *Chairman*,
J. N. LE CONTE,
E. T. PARSONS,
Outing Committee.

REPORT OF THE EXECUTIVE COMMITTEE, SOUTHERN CALIFORNIA SECTION, FOR THE YEAR 1913

The past year has been the most active in the history of the Southern California Section of the Sierra Club. The greatest single achievement of the members in this end of the State, has been the building of "Muir" Lodge in Big Santa Anita Cañon. A detailed descriptive article appears elsewhere in this issue. The splendid spirit of loyalty manifested by our members, both by their generous donations towards the Lodge Building Fund and the subsequent equipping thereof, has been very gratifying. Nearly 200 new members have been brought into the Sierra Club as a result, making our Southern list total 600.

Local walks have been held every two weeks with an average attendance of about thirty-five.

The recently elected members of the Executive Committee of the Southern California Section are as follows:

Chairman, Everett Shepardson; Secretary, Phil S. Bernays; Treasurer, Charles A. Fox; C. S. Tappaan; H. E. Bailey, Los Angeles; Miss Mary Kellogg, Pasadena; Miss Edith Steinberger, Sierra Madre; Dr. Geo. A. White, Santa Barbara; Geo. W. Marston, San Diego. The last-named gentleman through pressure of business has been compelled to tender his resignation, and in his stead Chas. P. Douglas of San Diego has been elected.

Much interest has been shown locally in the Hetch Hetchy proposition and many telegrams of protest have been sent to the Senators and to President Wilson.

Prospects for an active New Year in Southern California were never better.

For the Committee,

PHIL. S. BERNAYS, *Secretary.*

REPORT OF LE CONTE MEMORIAL LODGE COMMITTEE, SEASON OF 1913

The Committee desires to express its appreciation for the valuable activities of the Custodian during the past season. Worthy representation advances the Club interests materially and makes effective its efforts to serve the traveling public with hospitality and authoritative information regarding the entire Park region.

To the Le Conte Memorial Lodge Committee:

It was arranged that the Le Conte Memorial Lodge should be opened officially on May 1, 1913, and closed on August 1st, two weeks earlier than usual. But it was convenient to the Custodian to open the Lodge unofficially to the public shortly after his arrival in the Yosemite Valley on April 4th. About 250 visitors came to the Lodge during April. Although snow remained on the ground in the shadow of Glacier Point until May Day, the bright April sunshine made the Valley attractive to increasing crowds, who came to see its booming falls at their height. Also, in September's autumnal tints the Yosemite was in its richest splendor, affording rare delight to all who lingered late. The Custodian

believes that special mention should be made of the unusual charms of the Yosemite in early spring and Indian Summer.

From April 10th to August 26th, there were 2,713 visitors who registered. Many who came in large parties did not sign their names, and it has been estimated that forty per cent of those who came to the Lodge did not respond to repeated invitations to register. Therefore, the total number of guests of the Sierra Club at its Lodge in 1913 would approximate 4,500.

An unusually rainy season made the blazing fireplace welcome, and many lingered to get a better acquaintance with the Library. More books on natural science and out-door life are needed, especially the later works of John Muir and Joseph Le Conte.

Two improvements to the Lodge are needed. The fireplace is a menace to the safety of the building, and a stone or cement floor should be extended outward for at least three feet, replacing badly-warped wood. Also a water pipe should supply the Lodge directly, affording water not only for convenience but with sufficient pressure for adequate fire protection. An abundance of water, which can be readily provided, will also make it possible to irrigate an attractive fernery and wild-flower garden, conforming, of course, closely to nature. The Lodge is somewhat hidden from view, and such a fern and flower bordered walk would lead many more to its doors.

The Custodian begs to express his appreciation for the friendly interest in the Sierra Club and the Le Conte Memorial Lodge shown in many accommodating ways by the Superintendent of the Yosemite National Park, Major W. T. Littebrant; the Supervisor, Mr. Gabriel Sovulewski, and their soldier and civilian assistants; and to all the concessionaires in the Yosemite the same expression of appreciation is extended.

The Custodian was shown the historic cabin occupied for several years by the President of the Sierra Club near the junction of Tenaya Creek and the Merced River. It was found overgrown with shrubbery and almost inaccessible, and in such a condition as to most eloquently suggest its restoration as a habitable cabin and as a noted landmark of the Yosemite. Therefore, it is respectfully recommended to the Directors of the Sierra Club that steps be taken to build a path to the John Muir Cabin and that the cabin be placed in proper order. One day's work by the Outing Party of 1914 would accomplish this.

HAROLD FRENCH, *Custodian.*

The Committee learns with much appreciation of the andirons made for the Lodge and to be presented by the California School of Mechanical Arts. Remembrances of this sort add to the attractiveness of the Lodge and evidence tangibly the appreciation of those who have enjoyed its hospitality. Respectfully submitted,

LYDIA ATTERBURY,
J. N. LE CONTE,
E. T. PARSONS, *Chairman,*
Le Conte Memorial Committee.

NOTES AND CORRESPONDENCE

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of noteworthy trips or explorations, together with brief comments and suggestions on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, fish, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is Room 402 Mills Building, San Francisco, where all Club members are welcome, and where all the maps, photographs, and other records of the Club are kept.

The Club would like to secure additional copies of those numbers of the SIERRA CLUB BULLETIN *which are noted in the list in this number as being out of print, and we hope any member having copies will send them to the Secretary.*

ACTIVITIES OF THE CALIFORNIA BOTANICAL SOCIETY

The California Botanical Society, organized in April, 1913, with Dr. W. L. Jepson as president, reports a busy and profitable half year. The Society desires to promote botanical knowledge in a genuinely scientific spirit, at the same time the ornamental and esthetic aspects of plant study are not overlooked.

The society's activities include lectures by expert botanists, field trips, and exhibits for the purpose of familiarizing the members with California plant life. At present some members of the society are organizing a study class and will devote all possible time to increasing their scientific information under the direction of a trained botanist.

Two lecturers of note have appeared before the society recently: Dr. E. P. Meinecke of the United State Bureau of Plant Industry, who gave an illustrated lecture on "Forest Trees and Their Diseases," a very instructive discourse which was highly appreciated by the listeners; and Prof. Dr. Carl Schröter of Zurich, who spoke on "The Flora of the Alps," showing a large number of excellent stereopticon views. This fine lecture will be published with illustrations in the first journal of the Botanical Society, to be issued in April.

Prof. Schröter came as a member of the International Phytogeographic excursion which visited the Bay region in September. The society embraced the opportunity for entertaining the entire personnel of the excursion at a banquet at the Hotel Oakland. Seventy-five members and guests were present at the dinner, and several hundred persons listened to Prof. Schröter's lecture. It was a notable occasion on account of the presence of many famous botanists, among them Dr. Engler of Berlin.

Several excursions have been made to nearby points to study plants in their native habitats. In October an exhibit was held at the Oakland Public Museum, where 300 species of native plants were shown in flower or fruit.

MRS. D. W. DE VEER, *Secretary.*

IN MEMORIAM

Every one of the hundreds of members who have been on the Sierra Club Outings will learn with deepest sorrow of the death of Charley Tuck. For the information of those who have not participated in any of the Outings it should be stated that Charley Tuck has been the head cook on all of the thirteen annual Outings which the Club has taken. Not only did he fill this position in a most satisfactory manner—being faithful in the highest degree, exercising rare judgment in the conduct of his work, and possessing remarkable executive ability in planning and directing others under his supervision—but he made for himself a place on the Outing and in the hearts of those who came to know him that was exceptional for one of so different a race. It will be possible to secure others who can cook as well, and with experience they may even be able to fill his place in most other respects, but all who knew Charley will realize that his genius for getting along with people was unique and that we can never replace the jovial, good-hearted soul who entered into the spirit of the outdoor life with such zest, and who preserved a calm, unruffled spirit through every adversity and met difficult situations with such serenity of mind and yet who had such a fund of humor as to endear himself to all.

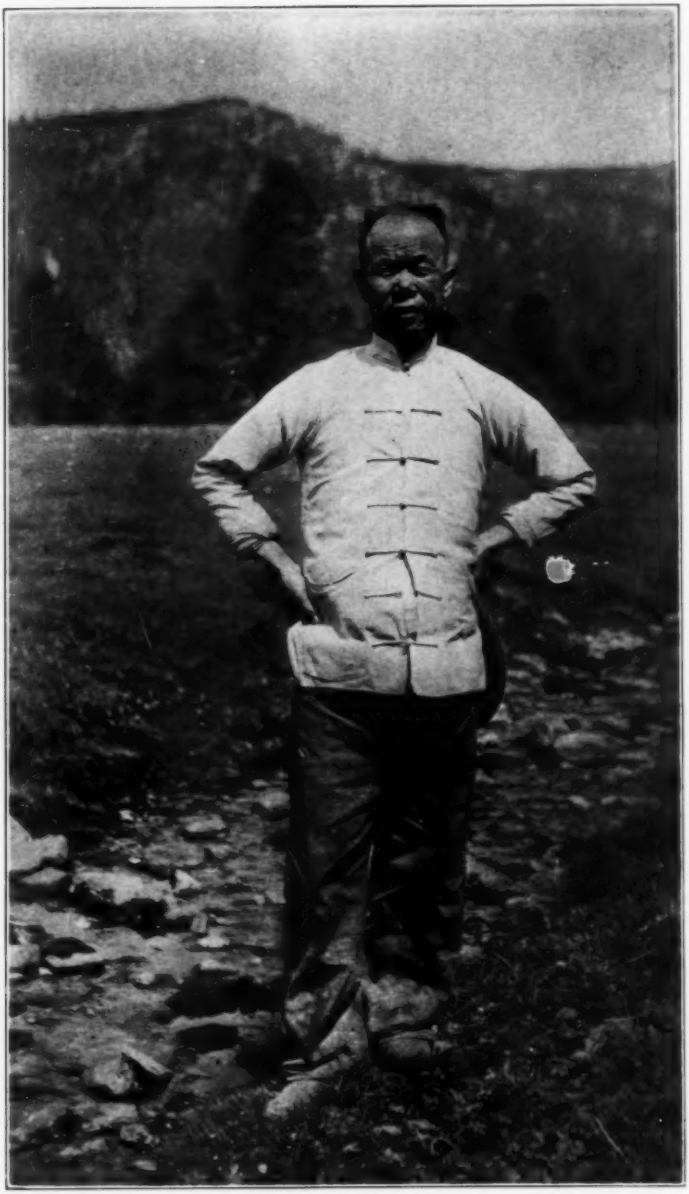
Charley Tuck came from the province of Canton, China. His name was registered as Toy Teak, but he soon gained the sobriquet of Charley Tuck among his American friends. He cooked for country hotels and finally for Ahwahnee station on the old Wawona route to Yosemite. By rare good fortune the Club accidentally hired him to cook for the first Outing in 1901, and his service proved so valuable that we made it worth his while to come with us each year since. We shall never forget his faithfulness shown on many occasions and under most trying circumstances. The day he was lost and rode alone thirty-two miles over snow and mountain passes, arriving at the Merced Cañon camp at 8:30 in the evening, long after dark, bringing food because he thought we could not cook without his aid, is only an example.

He was cooking for the Raisin Gun Club when taken ill, and died in the Fresno County Hospital, January 2, 1914.

He must have been between fifty-five and sixty years of age. His friends say that he leaves a dependent wife and son in China.

We can get other good cooks for the Club Outings, but we can never get another Charley Tuck.

W. E. C.



CHARLEY TUCK, KERN RIVER OUTING, 1912.
Photo by Everett Shepardson.

PHOTOGRAPH OF THE MT. TAMALPAIS FIRE, 1913.

Fire Prevention on Tamalpais

By Frederick E. Olmsted

Forester for the Tamalpais Fire Association

The disastrous fire on Mount Tamalpais last summer has had one excellent result. Measures are now being taken which will make a recurrence of such a conflagration impossible.

The story of the big fire is too well known to need repeating; but the lessons to be drawn from it are extremely interesting and should be emphasized over and over again. As in the case of every serious forest or brush fire the great mistake occurred at the very beginning. The fire was not put out at the start. When a fire is small it is easily controlled and squelched. After it has spread, fanned by violent winds, whole armies of fire fighters are of little avail. A brush fire, by the way, is never out until it is *cold,* a fact which is too often disregarded with dire results.

This particular fire could have been nipped in the bud and frozen at the outbreak if the machine for just that purpose had existed and acted. There was no such machine. The big fire was the outgrowth of one or two little fires which were fought and apparently conquered by volunteer fighters, chiefly employees of the Mount Tamalpais Railroad. The railroad, by the way, is always on the job when fire breaks out and gives freely of its men and resources in emergencies. Last August this crooked road dug into its pockets for something like $10,000 before the fight was finished, a fact which the public should bear in mind. However, fire fighting was an incidental duty to railroad section men; they had their regular work to perform and went back to such work when they thought the little fires had been put out. The fires were not out. When this became evident and the section men were thrown back to fire fighting work they found conditions beyond their control and were obliged to call for assistance.

From then on the story is simply one of the rapid spread of the fire, involving a constantly greater fire line to hold in check, and repeated calls for more and more men to do this work. At this stage of the proceedings another lesson became clearly evident. As soon as the fight drifted out of the hands of the section crew and its boss, there was no boss. Or, what was still worse, there were numerous bosses, each one knowing precisely what should be done and no two of them agreeing about it. As a consequence the attacking forces became a hodge-podge of individual effort without orderly direction or plan, resulting in fatal delays, wasted work and indescribable confusion. Out of this chaos order was slowly restored, first through a citizens' committee in Mill Valley acting in co-operation with Mr. Runyon of the railroad, and, later on, through the good offices of the United States Army, working under the advice of the District Forester, United States Forest Service. By that time some four or five thousand men were endeavoring to put out a fire which, before it ran its course, involved a total loss of nearly $50,000. If half a dozen well equipped men had been

on hand at the start, and if these men had stuck to the fire until it became cold, there would have been no loss whatsoever. Even at a later stage, after the fire had gained considerable headway, it could have been subdued without great loss of money and labor if it had not been for the lack of recognized authority, organization and equipment.

The best time to fight a brush fire is before it starts. This is further illustrated, moreover, by the great difficulty the fire fighters had in getting to the fire and in fighting it promptly when they did get to it. The trails of the region were few and far between and in poor condition. To reach the fire, therefore, it was often necessary to cut one's way up and down hill through the chaparral, and this, needless to say, is about the hardest work in the world and exceedingly slow work. To check a brush fire it is usually necessary to cut a line around it, using this line as a base from which to smother the flames; and it sometimes becomes necessary to backfire, in which case a cleared and cleaned strip which completely "corners" the fire is absolutely essential. There were no such strips or fire trails ready made and their construction involved a priceless loss of time and energy.

Efficient protection against fire in forest or brush calls for a ready-made organization, a directing head, quick communication by telephone and trail, lines already cleared from which to fight, and organized forces of trained fire fighters under definite leadership.

The Tamalpais Fire Association exists to give systematic protection against fire to some 40,000 acres of mountain land in the Tamalpais region. That much is planned for at the start. Later on, it is probable that the system will be extended to all the forest and brush lands of Marin County. Moreover, when the results of this practical example are visible on the ground, it is not unlikely that similar associations will be formed in other parts of California, wherever conditions are much the same.

Briefly stated, the Association is establishing a paid organization devoted to fire prevention, including a general manager (the forester), patrolmen, lookouts, and fire-fighting forces. It is building fire trails, so planned as to make the whole region easily and quickly accessible, and to afford suitable lines from which to fight fire. It is building extensions to existing telephone lines for the purpose of obtaining quick information about the start and location of fires. It is storing supplies of fire-fighting tools at convenient points all through the district so that the necessary implements may be right on the spot when fire occurs. Finally, it is organizing and training the best available fire-fighting forces of the locality.

The Forester, as the executive officer, has a free hand in the organization and administration of the Association's work. In case of fire his authority is supreme. Under him, during the danger season, are the patrolmen who will be stationed at strategic points on or near the mountain from which they may quickly discover fire when it starts and from which they may quickly get to the fire after it is discovered

or reported. There will be a lookout on top of the mountain, always watching for smoke and reporting it by telephone to the nearest patrolman without delay.

A most important part of the protective system will be the detailed organization of all available fire-fighting forces in the locality. Such organizations will be formed, for example, in Mill Valley, Corte Madera, Larkspur, Kentfield, Ross, San Anselmo, and Fairfax. In each town will be a resident agent of the Association whose duty it will be to gather and forward men, tools, and supplies in case of fire. He will have a roster of the best men available in his vicinity for fire-fighting work, and these men will have agreed beforehand to fight fire when called upon under certain definite terms as to pay. This agent will have tools and food supplies at his immediate disposal and will forward them to the fire-fighting line as directed by the officer in charge. He will not leave his station in town during a fire. His job will be not to fight fire but to assemble and forward the means of fighting it.

In all such towns, also, will be a crew leader who will be the boss of the fire-fighting forces gathered from his vicinity. He will be a man thoroughly experienced in fire-fighting work, will command the confidence of his men, and his authority will be clearly understood beforehand.

In the past, much costly delay has resulted from the fact that no tools were on hand with which to fight fires. To avoid this supplies of shovels, axes, brush hooks, lanterns and other fire-fighting implements will be stored in boxes or cabins at convenient points all through the district, so that wherever fire breaks out the means of fighting it will be right on the ground.

Fire trails are indispensable. Their construction will be spread over a period of three years and at the end of that time about seventy miles of line will be completed. They will be built, for the most part, on the tops of ridges, will be of varying width, and will be cleared of brush and all other inflammable material. When once constructed it will not be a difficult or expensive matter to keep them clean. Fire trails serve two important purposes. They furnish lines of communication over which to rush men, tools and supplies in case of fire, affording ready and quick access to all parts of the region; and they form excellent and very necessary bases from which to fight fires, making safe ground from which to backfire if that becomes necessary.

As a matter of course, much educational work will be done. Trails and camping places will be posted with conspicuous notices calling attention to the danger from fire, urging caution in the use of fire, and giving specific directions about what to do if fire occurs. Literature on the subject will be given out in such form as readily to attract the eye and impress the mind.

For the first three years the cost of this work will be in the neighborhood of $7,000 a year. Thereafter, when the construction work is completed, the cost will fall to about one-half that sum. The bulk of the

needed money is already arranged for, and the scheme of financial co-operation is the most interesting part of the whole plan. Although the Tamalpais region is privately owned it is, nevertheless, in the nature of a vast public recreation ground. For this reason it is fitting that a part of the expense for protection should be defrayed by the public enjoying the use of the lands and a part by the property owners within the district concerned. Nearly half the necessary funds, therefore, will come from membership dues in the Association, the remainder being drawn from the property owners, from various of the towns in the danger zone at the foct of the mountain and, perhaps, from the county. Incidentally, one or two public spirited citizens have made substantial voluntary contributions.

The work of the Association is unique, not so much in the protective methods to be used as in the remarkable co-operation between the many different interests through which the protection is made possible. It is the first practical example in the United States of the application of intensive methods of fire protection to a solid block of country privately owned and publicly used, the actual landholders representing extremely varied interests. The form of management which may ultimately supercede the Association is, of course, a matter of conjecture. It is quite possible, for instance, that the organization may later on become of a public or semi-public nature, a state of affairs which could be brought about through proper legislation and decided changes in other directions. In the meantime the Association aims thoroughly to establish the protective system as planned and to maintain it at a high point of efficiency. This done, and a visible example afforded of what systematic effort can acomplish, the future of the work is secure regardless of what particular agency may carry it on.

First Ascent of the Devil's Crags—Chas. W. Michael

On July 21, 1913, I left my camp on the headwaters of Rambaud Creek to try for the summit of the Devil's Crags, and after scanning the north wall of the mountain carefully, concluded that it was not feasible. I went on across the pass west of the peak, turned east and climbed a peak just south of the main peak, where I obtained a good view of the south wall. This seemed to be the only possible route, so I decided to make a try. I reached the summit at twelve o'clock after a difficult climb up a very narrow chimney. I came out on the knife-edge about 100 yards east of the highest point.

The whole summit is nothing more than a very sharp knife-edge. I stayed on the summit till one P. M., and returned by the same route, arriving at the base camp at four P. M.

I discovered an old trail leaving Grouse Meadow going up Rambaud Creek, and crossing the Black Divide about a half mile east of the Devil's Crags.

DEVILS CRAGS FROM THE SOUTH. CLIMB WAS MADE UP CRACK TO LEFT OF SUMMIT.
Photo by Chas. Michael.

DEVILS CRAGS IN FOREGROUND—PALISADES IN DISTANCE.
Photo by J. Floyd Place.

MIDDLE PALISADE FROM OBSERVATION PEAK.

DEVILS CRAGS FROM PALISADE CREEK.

Photos by Chas. Michael.

Mt. Rainier 14,408 Feet High

The height of the summit of Mt. Rainier, Washington, has been determined by the United States Geological Survey to be 14,408 feet above mean sea level. This elevation now officially displaces the former supposed height of the mountain of 14,363 feet and accords to Mt. Rainier the distinction of being the second highest mountain peak in the United States, Mt. Whitney, California, being the highest. The correct height of Rainier was determined by a party of topographic engineers of the Survey in connection with the mapping of the Mt. Rainier National Park, which was completed last summer. The topographic survey of the park was begun in 1910 by F. E. Matthes, continued in 1911 by Mr. Matthes and George R. Davis, and finished in 1913 by C. H. Birdseye, W. O. Tufts, O. G. Taylor, and S. E. Taylor.

In the mapping of the summit of the mountain a terrific blizzard was encountered; in fact, two ascents of the upper portion of the mountain were necessary. The first ascent of the upper 4,550 feet was begun at 5 o'clock A. M., August 16th, and dawn broke with every indication of developing into a beautiful day. On reaching the summit the men encountered a terrific gale, clouds enveloped the mountain, preventing observations, and by noon snow began to fall. A descent was attempted, but the party became hopelessly lost in a labyrinth of crevasses, the storm developing into a blizzard. To descend farther was impossible; to remain was suicide. Consequently a return to the crater was ordered, and the men reached it after a two hours' climb, utterly exhausted and nearly frozen. Here they sought shelter in one of the steam caves, where, during the long night they were thoroughly steamed and half frozen in turn. Strenuous measures were employed by the men to keep from falling asleep and freezing to death. As it was, their fingers and ears were badly frozen. Finally, with a rising barometer, they succeeded in descending 9,000 feet to a temporary camp, making the descent in three hours. Here they recuperated and prepared for another ascent, which was accomplished on August 20th, the start being made at 1 o'clock in the morning. Good weather was encountered and the mapping of the entire summit was finished by 1 o'clock.

"If anyone thinks that American glaciers are play glaciers, or that the weather which may be encountered at the summit of Mt. Rainier in August is uniformly balmy and springlike," said Mr. Birdseye, whose fingers and ears were badly frosted, "let him climb Mt. Rainier during one of its summer blizzards. The steam caves in the crater are not the pleasantest places imaginable to spend the night in, but had they not been there, not one of us would be alive to-day to tell the tale."—*U. S. Geological Survey Bulletin.*

Note:—The mountaineers of the Pacific Northwest will no doubt jubilate at the above announcement by the United States Geological Survey of the new figure for the altitude of Mt. Rainier. It places that peak close to the top of the list of high mountains in the United States. Mt. Rainier's closest rival on the Pacific Coast, Mt. Shasta,

it so happens, has just recently been beheaded by the United States Coast and Geodetic Survey, and now can claim no more than 14,162 feet, that is, 218 feet less than it once boasted. The great volcano of Puget Sound is thus left well in the lead.

A review of the different figures that have been announced in the past for each of the higher peaks of the United States would almost justify one to infer that these summits have a peculiar habit of fluctuating in height from time to time. Both Rainier and Shasta have been notorious for their inconstancy; so much so indeed that it is to be feared that the public will lose faith in the trustworthiness of altitude determinations in general. There is good reason to believe, however, that the last announcements for these two peaks are not likely to be changed again. About Mt. Shasta, perhaps the Coast Survey is the only party able to speak positively; but as regards Mt. Rainier, the Geological Survey feels satisfied that the new figure is the best that can be obtained with modern methods and instruments.

The elevation of Mt. Whitney (14,501 ft.), it may be remembered, was determined by actual leveling, but such procedure would have been impossible on Mt. Rainier, as the most practicable route to its summit leads over many miles of snow and ice, and up a precipitous chute several hundred feet in height. On thawing snow accurate leveling is out of the question, for the instrument cannot be set up so firmly that it will not settle slightly between back and fore sights. To execute this pottering kind of work in freezing weather would entail both hardship and great expense. But the obstacle that would have proved entirely insuperable to levels on Mt. Rainier and led to the abandoning of that method is the dreaded Gibraltar Rock, well known to many who read this magazine. To carry levels up its precipitous side is for practical considerations all but impossible.

It was necessary, in the case of Mt. Rainier, to resort to long-distance methods of angulation. That is to say, sights were taken to its summit from neighboring peaks, six to eight miles distant, the altitudes of which had been carefully determined, and the positions of which with respect to the mountain's summit had been computed from a scheme of triangulation.

It is not possible to execute vertical-angle measurements of this sort with the precision obtainable by leveling; at the same time, by providing a sufficient number of checks and repeating each measurement many times, a result can be attained that can be relied on within a foot or two. And closer than that, the determination of a snow-capped peak, such as Mt. Rainier, need scarcely be; for its actual height is bound to fluctuate by several feet from year to year and even from month to month.

It is gratifying to note how closely the new trigonometric determination of Mt. Rainier accords with the barometric one of Prof. Alexander McAdie (14,394 ft.). It is hoped that this agreement between the results of two fundamentally different methods will strengthen

public faith in their reliability, and lead to the discarding of other figures (some of them much exaggerated) that have appeared in print from time to time.

In closing, it may be said, that the Geological Survey's Bulletin little more than hints at the fortitude and pluck of Mr. Birdseye and his party in their almost disastrous experiences on the peak. Survey men are so frequently confronted by peril in their daily work, that they are not apt to write or talk about it, and as a consequence the public seldom learns the intimate details. It is to be hoped that the history of this undertaking will some day appear in full. F. E. MATTHES.

WILL OPEN TRAIL INTO GROUSE VALLEY

Grouse or Paradise Valley is to be opened to the mountaineer and the tourist from the Fresno side by a trail.

This is the plan that Supervisor Paul G. Redington of the Sierra National Forest presented yesterday to the supervisors at a conference to secure their co-operation and financial assistance in trail building in the mountains of this county. The particular trail that he has in mind at this time is the extension of the Tehipite-Simpson Meadow trail into Grouse Valley on the Middle Fork of Kings River.

The trail from Tehipite up the cañon of the Middle Fork to Simpson Meadow, was put in good condition last year, and for the first time safe passage through this cañon may now be made. About six miles above Simpson Meadows lies Grouse Valley, which though accessible by trail from the Inyo county side of the mountains, can be reached from the Fresno county side only by an arduous and somewhat perilous climb. Because of the scenery, excellent horse feed and good hunting and fishing to be found at Grouse Valley, a strong demand has been made for a feasible trail to connect it with Simpson Meadow.

While the proposed trail will be through a very rough and picturesque section, it is estimated by the Forest Supervisor that the trail can be built for about $3,000. Supervisor Redington will allot a portion of the government funds to assist in putting through this trail, and the Sierra Club has volunteered to make an appropriation for the same purpose.

It was brought out in the discussion that because of the cost, the complete trail cannot be built during the coming season, but a considerable portion of it will be built under the direction of the forest service. The supervisors promised co-operation and ordered an allowance of $500 out of the general road fund to be made after July next for this season's work. The Sierra Club and the Forest Service are expected to contribute a like sum.

Supervisor Redington also announced that he will continue the policy of annually adding new "tourist pastures", improving trails and otherwise looking out for the comfort and convenience of the outing public.—Fresno *Republican*, Jan. 10, 1914.

Olmsted on Hetch Hetchy

(Editorial Boston *Transcript*, Nov. 19, 1913.)

The *Transcript* to-day presents a discussion of the Hetch Hetchy Valley by Frederick Law Olmsted. By reason of his nation-wide reputation as an expert in all matters of landscape, his opinion upon this important case will command the attention of the public at large, and because of his official position as a member of the National Fine Arts Commission, upon which he has contributed most distinguished service, his word will have weight with Congress. Mr. Olmsted has followed this case with deep interest for several years, and has studied the engineering reports and the various arguments, pro and con, with care, but until now, largely because of his official relations to the Government, he has been reluctant to express an opinion. Inasmuch as those who favor the giving of the valley to San Francisco for a municipal reservoir have been so insistent that the lake thus created would furnish an added beauty to the Yosemite Park, without in any wise detracting from its usefulness and natural charm, and have made this point so prominent a feature of their argument, the *Transcript* asked Mr. Olmsted for his opinion upon it. His article is the first contribution to the discussion of this really fundamentally important phase of the question by anyone fully qualified by professional training to pass upon it. Until now all who have hazarded this point of view have been stigmatized as hysterical "nature fakers." It will be difficult to make the public believe that Mr. Olmsted belongs in that class.

The San Francisco Water Supply Controversy as the Foremost Landscape Authority Sees It

By Frederick Law Olmsted

The controversy over the bill to grant San Francisco reservoir rights in the Hetch Hetchy Valley seems to turn upon three principal points:

I.

THE EFFECT OF THE PROPOSAL UPON THE VALUE OF THE YOSEMITE NATIONAL PARK

The proponents have claimed that the proposed lake will add to the beauty of the scenery, that the improved facilities for access will further increase the value of the park to the public, and that the losses are so slight that there will be no net damage to the park as a place of public recreation.

The opponents have claimed that the damage to the scenery and the restrictions upon the public enjoyment of the park would be such as to impair its value very seriously indeed.

II.

THE ECONOMIC ADVANTAGES OF THE PROPOSAL

The proponents have claimed that the additional water which will certainly be needed in the course of a few years for San Francisco and other bay cities, and that hydraulic power for which a local use will be found, can be obtained at a much less cost by this project than otherwise. How much less has not been definitely estimated. If there is no offsetting damage to the park, or if it is so slight as to be negligible, as claimed, it is enough to say the economic gain is large without need to ascertain just what it is.

The opponents have admitted the probability of large economic advantages for the project, but since they believe the offsetting damage to be very great they insist that the probable economic gain to the community should be definitely appraised and fairly balanced against this loss before a decision is reached.

III.

TO WHOM SHOULD THE ECONOMIC ADVANTAGES OF THE PROJECT, IF EXECUTED, ACCRUE

The proponents have claimed,—on the hypothesis that there would be no serious damage but rather a gain to the value of the park, on the ground that the cash for executing the project would be furnished by the city, and on the ground that the city has an ownership in fee of a portion of the land to be flooded—that substantially the entire economic advantages resulting from the project should be permitted to accrue to the treasury of the city. And the present bill so provides.

The opponents have claimed—on the hypothesis that the project would result in a great loss to the people of the United States through impairing the value of the park—that substantially the entire economic advantages resulting from the project, if executed, should accrue to the Treasury of the United States, as a recompense for that loss.

WHERE THE CASE HINGES

It will be seen that the fundamental difference arises over the first point.

If it were to be universally admitted that the execution of the project would inflict a really great loss upon the people of the United States through injury to the Yosemite National Park, the only ground upon which the present bill could be advocated is that the taxpayers of San Francisco are for some reason entitled to a large subsidy from the citizens and taxpayers of the rest of the country. This is not seriously claimed by anyone.

If on the other hand it can be established that the project would, upon the whole, involve no real and substantial depreciation in the value of the park as a place of public recreation, the development clearly ought to be permitted; and the question would then be whether the highest economic use of all available resources is to be secured by appropriating the waters of the Tuolumne mainly to the use of San

Francisco, or by applying them to additional irrigation in the Tuolumne region and using for San Francisco one of the other sources of water supply available for that purpose.

The whole case largely hinges upon the answer to the question of whether the project would or would not seriously depreciate the value of the Yosemite National Park for the purposes to which it has been dedicated.

I think I approached the matter with as little prejudice as a man, sufficiently informed to be a competent judge, well could have; because I did so with two general principles uppermost in my mind, one of which pointed a priori to the assumption that the valley ought to be used for water works purposes, the other that it ought not.

COMBINING TWO USES

The first principle is so well set forth by Mr. Allen Hazen in Mr. John R. Freeman's report to the city of San Francisco that I cannot express my own thoughts better than by quoting what he says, with the addition of a single word, in square brackets, to qualify the universality of its application:

> Granting the desirability of keeping certain areas free, or substantially free, from population, for the purpose of drawing public water supplies from them, and of keeping certain areas free from population for the purpose of using them for parks, the park areas being selected with reference to their natural beauty and facilities for camping and use by the people, there seems to be no reason why these two classes or areas should be kept separate. [Ordinarily] the use of an area for one purpose does not interfere appreciably with its use for the other purpose, and from the standpoint of conservation and the fullest use of the resources of the country there is every reason why the two uses should be combined as far as it can be done advantageously, and the same area used for park purposes and for water supply purposes.

I have urged this principle again and again, and have done not a little in helping to put it into practice. Where water supply is the prime purpose to be served it is very often possible to secure incidentally important means of public recreation of certain kinds at a very slight additional cost and with no impairment of the water supply function whatever, thereby reducing the extent and cost of park facilities that need to be independently provided. Not infrequently land acquired and policed primarily for park purposes may serve incidentally to protect the purity of a water supply, or may afford rights of way for water works or sites for reservoirs, with no impairment of their park value or even with actual increase of park value; while the economy thus effected in the waterworks may also justify the expenditure of water supply funds for the accomplishment of additional park purposes, as in the costly and interesting scenic road proposed by Mr. Freeman for the Hetch Hetchy.

UTILITARIAN AND ÆSTHETIC VALUES

The other principle is much harder to state clearly, but is equally sound and equally important. It is based on the fact that the value of any object of beauty, whether mainly natural or mainly a work of art

depends upon the cumulative effect in combination of innumerable details which may appear individually to have but little significance, and the fact that where an alteration is proposed in certain details of such an object of beauty, it is much easier to perceive and to set forth clearly and convincingly the utilitarian advantages or disadvantages of the change, than it is to perceive and set forth clearly the artistic advantages or disadvantages. Not only that, but whereas each one of ten possible changes might produce a utilitarian gain (or loss) of $100, and their total utilitarian gain (or loss) be $1000, the cumulative effect of the ten changes upon the beauty of the object is apt to be enormously more than ten times the effect of any one of them.

In most of the objects with which we are concerned beauty is, and ought to be, an absolutely incidental factor. We want only that sort and degree of beauty which is compatible with a high degree of utilitarian efficiency. Some things, however, are of value wholly or primarily for their beauty, and if they have any direct utilitarian value it is utterly secondary and incidental. The extraordinary difficulty of balancing artistic gain and loss against utilitarian gain and loss in detail, and the manifest weighting of the scales in favor of the utilitarian side whenever this process is followed, make it important to segregate sharply from the vast majority the things of this latter class. The first question in regard to any one of these things, valuable primarily for their non-utilitarian beauty, is—can we afford it? If not, we give it up; sell it to someone who can afford it, or else transfer it to the class of things in which the beauty-value is secondary to the use-value. If we can afford it, we direct our efforts toward conserving and making available its primary value, its beauty, just as far as we can afford to do so, never subordinating it to considerations which we have decided to be secondary in this particular case.

THE BURDEN OF PROOF

Beauty of scenery is ordinarily and properly an incident, a by-product in man's use of the earth, but certain kinds of valuably refreshing scenery are so incompatible with the ordinary economic uses of land in and about large cities that, if they are to be made available for the use of the citizens at all, certain tracts must be given over specifically to that purpose, even at a considerable cost. It may be a question in any given case whether the game is worth the candle, and of course the incidental use of the same land for other non-conflicting purposes will always help to lighten the burden, but until it is deliberately concluded that the value of the landscape beauty is no longer the prime justification for the maintenance of the park, the only safe rule is to permit no other avoidable use of its land which in any degree impairs the value of the park for that purpose. The argument that to place a pumping station in a city park will injure its scenery only a little, and will save buying a site outside, spells ultimate ruin for the quality of the park scenery, through cumulative injuries, each supported by the same argument.

The same principle applies to parks remote from cities which have been definitely set aside for the purpose of preserving for public enjoyment scenery of especially precious and valuable sort, or especially subject to injury by commercial exploitation. When it is proposed to use such a park for a different purpose, the advocates of the new project must bear the burden of proving that the new use will not impair the scenery.

This principle is the necessary complement to the principle of combining park and water supply functions, if beauty of scenery is not to be pushed to the wall at every point of conflict in detail by the more obvious claims of utilitarian advantages. It was with these two principles equally in mind that I addressed myself to the question of what effect the Hetch Hetchy dam project would really have upon the quality of the scenery; anxious to justify the use of the valley for water supply if compatible with the park values, but determined not to shut my eyes to any real injury if it should appear inevitable.

THE YOSEMITE'S DISTINCTIVE CHARM

My conclusion is that the proposed reservoir would effect an enormous injury to the scenery of the Hetch Hetchy Valley and a very serious permanent loss in the total value of the Yosemite National Park for the purposes it was created to serve.

Some of the grounds of this conclusion I will state as briefly as I can. In the first place, what my father wrote years ago about the Yosemite scenery in general applies specifically to the scenery of the Hetch Hetchy, namely:

The distinctive charm of the scenery of the Yosemite does not depend, as it is a vulgar blunder to suppose, on the greatness of its walls and the length of its little early summer cascades, the height of certain of its trees, the reflections in its pools, and such other matters as can be entered in statistical tables, pointed out by guides and represented within picture frames. So far, perhaps, as can be told in a few words, it lies in the rare association with the grandeur of its rocky elements, of brooks flowing quietly through the ferny and bosky glades of very beautifully disposed great bodies, groups and clusters of trees. In this respect, its charm is greater than that of any other scenery that, with much searching, I have found. There is nothing in the least like it in the Cañon of the Colorado, sometimes foolishly compared with the Yosemite. I felt the charm of the Yosemite much more at the end of a week than at the end of a day, much more after six weeks when the cascades were nearly dry than after one week, and when, after having been in it, off and on, several months, I was going out, I said, "I have not yet half taken it in."

To substitute an expanse of water for the sylvan landscape of the valley floor would wipe out of existence that apparently minor element of the Yosemite scenery which makes its charm unique in all the world. It would change it into a sort of imitation of the scenery to be found in certain sea coast fiords, not without great impressiveness indeed, but a radically different and far less rare and precious thing than is the existing scenery.

UNSIGHTLINESS—MUDFLATS

That is the crux of the whole matter as far as concerns the value of the park. It does no harm to point out that in the second place, apart from the incalculable importance of the foreground and surroundings provided by the landscape of the valley floor in contributing to the impression that is made upon the visitor by the scenery as a whole, the best views are unquestionably those to be obtained from the level of the valley floor at a short distance from the base of the cliffs looking up, whereas with the reservoir the views, except from boats, are to be obtained almost exclusively from above looking down or from a road cut out of the rocks part way up on one side of the valley and looking across.

It is also true, in the third place, that the proposed body of water would not be a normal mountain lake but a reservoir regularly subject to depletion, leaving a margin of unsightly banks and mudflats exposed along a considerable part of the shore except for brief periods of high water not occurring every year. It is true that the shores at high-water mark are generally steep and that the water would be highest in summer when the greatest influx or visitors will always occur; but a careful study of the fluctuations in water level which would occur under the conditions indicated by the mass curves for a seventeen-year period (not including the dryest periods on record) as given in Mr. Freeman's report and of the topographical data given by him, makes it certain that the unnatural and disagreeable appearance of a partially depleted reservoir would be apparent by far the larger part of the time, and that even in the summer months this effect would be apparent to such a degree and for such lengths of time as seriously to mar the enjoyment otherwise derivable by the public from the appearance of the reservoir. At the best the water would begin to fall during the summer months and not fill up again till late in the spring. At the worst there would be about three square miles of bottom exposed and only one square mile of water, the water remaining more than fifty feet below high water mark for a year and a half.

VARIETY AND PECULIARITY OF SCENERY

Maybe the draft upon the reservoir would be less than that assumed by Mr. Freeman and the fluctuations slighter; maybe the draft would be more or the rainfall less and the exposure of the muddy bottom worse. But it is not essential to go minutely into these details to or weigh the claim that the necessary sanitary regulations would interfere seriously with camping in the Park, a matter that seems to me to have been somewhat exaggerated by the opponents of the reservoir project. The vital point is that the making of the reservoir at all would essentially alter the character of the scenery for the worse.

It has been urged that even if the presence of a large, fiord-like body of water would not be an absolute improvement to the Yosemite scenery, its occurrence in part of the Park would lend a desirable variety to its

scenery as a whole. I am never unmindful of the advantages of variety; I am well aware that to be able to point out all other obviously different landscape features in the vicinity would provide another excursion and hold many visitors longer in the Park, and might, other things being equal, attract more people to it in search of enjoyment; just as it is certain that the establishment there of a well conducted resort for purely social and gregarious pastimes, especially if provided with a good gambling casino like those in many popular European resorts, would attract enormously larger numbers to the Yosemite, and give to many of them resources of enjoyment which they would rank higher than those of the natural scenery; but any of these kinds of advantages would in my opinion be purchased at far too high a price by impairing the full enjoyment of these landscape qualities which, in all the world, are peculiar to the Yosemite scenery, which are even now seen and appreciated by considerable numbers and which in the next few centuries will, I believe, become of incalculably larger value to humanity.

SCENERY IN THE TWENTIETH CENTURY

I acknowledge that it is fairly debatable how much of this commodity called Yosemite scenery the world will be able to put to effective use as the centuries go by, and acre by acre the lands of all the earth must be put to more and more intensive use. It is debatable how much such land the world can in the long run afford to segregate for the sake of its highest recreative values when those come into conflict with the full economic use. The last century, however, has shown such an enormous increase in the appreciation of and resort to the wilder and less manhandled scenery as a means of recreation from the intensifying strain of our civilization, and the amount of that scenery is so rapidly shrinking that it is a very rash and unconservative thing, in the present time of transition to abandon or to make over into an essentially different thing any piece of such scenery that has once been deliberately set apart, to be saved, as a sample for the use of posterity.

The number of people who now visit the Hetch Hetchy, or even the portions of the Yosemite Park which have been rendered more easily accessible, is no measure of the extent to which its scenery will be enjoyed throughout the twentieth century, and the crowded centuries to follow it. What my father wrote in his report on the Yosemite in the sixties points this out very clearly:

> It is an important fact that as civilization advances the interest of men in natural scenes of sublimity and beauty increases. Where a century ago one traveler came to enjoy the scenery of the Alps, thousands come now, and where even forty years ago one small inn accommodated the visitors to the White Hills of New Hampshire, half a dozen grand hotels, each accommodating hundreds, are now overcrowded every summer. In the early part of the present century the summer visitors to the Highlands of Scotland did not give business enough to support a single inn, a single stage coach or a single guide. They now give business to several railroad trains, scores of steamboats and thousands of men and horses every day. It is but sixteen

years since the Yosemite was first seen by a white man, several visitors have since made a journey of several thousands of miles at large cost to see it, and notwithstanding the difficulties which now interpose, hundreds resort to it annually. Before many years, if proper facilities are offered, these hundreds will become thousands and in a century the whole number of visitors will be counted by millions. An injury to the scenery so slight that it may be unheeded by any visitor now, will be one of deplorable magnitude when its effect upon each visitor's enjoyment is multiplied by these millions.

IMPROVEMENTS AND PRECEDENTS

The monetary value attached to any object of beauty, whether natural or artificial, by public opinion, even by the opinion of the more intelligent part of the community, is a strangely fluctuating thing. For how many centuries were the most beautiful buildings of classic civilization regarded by the best minds of Europe as having no value higher than as stone quarries. What ruinously wasteful destruction was committed with entire self-approbation in the name of "improvement" during the period of the Renaissance upon the wonderful artistic inheritance from the Gothic period. What splendid gardens of the Renaissance were exultingly swept out of existence in the first flush of the fashion for informal landscape that came with the growing appreciation of the beauty of nature in the eighteenth century. The lesson of history in this respect is unmistakable; a thing which many people have held to be of great and peculiar beauty and which cannot be replaced, even if the predominant men of the day fail to appreciate its beauty or are inclined to think its beauty would be increased by "improvements," ought not to be destroyed or radically altered except under pressure of unavoidable necessity or after the most deliberate searching and humble inquiry as to whether the predominate opinion of the day is really right or is perhaps a passing phase colored by unconscious prejudice.

The United States deliberately undertook to preserve the scenery of the Yosemite National Park intact for the enjoyment of all future generations.

The people of the United States are not yet so poor that they cannot afford to persevere in this purpose.

To use the Hetch Hetchy as a San Francisco reservoir site would be to abandon that purpose by indirection, and would establish a precedent for abandoning the purpose of any and every park in case it conflicts with any considerable utilitarian interests.

Mazamas

The Mazamas ushered out the final days of 1913 with a ski party on the south slope of Mt. Hood. Fifteen members of the Club left Portland the morning of December 27th, and traveled by train to Bull Run, where stages met them, transporting the party and equipment to Rhododendron Inn, ten miles from Government Camp. Here they were met by Elijah Coalman, veteran Mount Hood guide, with skis. Three days were spent in the deep snow at Government Camp, where under the tutelage of Mr. Coleman some of the party became adept at the sport. A watch party and Christmas tree was held at Rhododendron Inn New Year's Eve, at which there were a great many backwoods people. A burlesque performance was staged by members of the party. H. H. Prouty, President of the Mazamas, and J. E. Bronaugh, Vice-President, were members of the outing party, which was led by Osmon Royal, Jr.

One of the events planned for early summer by the Mazamas is a flying trip on July 4th to Crater Lake. The outing will be made by special train to Medford and by automobile to the lake and return.

The twenty-first annual outing of the Mazamas has been set for August 1st to August 16th and the north side of Mt. Rainier will be the objective. The Mazamas have not visited Rainier since 1905, when the Sierras and Mazamas held a joint outing in Paradise Park, south side of the mountain. The 1905 outing was the largest and most successful in the history of the organization. The 1914 outing is expected to prove quite popular, and inquiries from members of other mountaineering organizations are already being made. The north side ascent offers opportunity for considerable real mountaineering. Permanent camp will be made between the Winthrop and White River Glaciers, the route to the camp being twenty-two miles by trail from Fairfax.

Mountaineers

The winter outing of the Mountaineers was held at Mt. Rainier. Leaving Tacoma December 28th, the party walked from Ashford to the National Park Inn. Snow conditions were much easier than the previous year, there being only about six inches on the trail and road. Those having no snow-shoes followed a trail to Paradise Valley under the leadership of Mr. John Reese, and the ladies who accompanied him had the honor of being the first women to spend a winter night in Paradise. The men of the party stayed in Reese's cabin and the women in the Ranger's cabin. The party on snow-shoes went first to Van Trump Park, and later to Paradise, where a small party climbed to McClure's Rock. One splendid trip was to the Nisqually Glacier, guided by Professor Flett. The New Year was welcomed with the usual ceremonies and the outing was another most successful one.

Washington's Birthday will be spent at Scenic Hot Springs. A two-day outing has been planned and is in charge of Mr. P. M. McGregor.

The Everett Mountaineers conducted a most successful New Years Day outing in the snow at Index.

YOSEMITE, CALIFORNIA, November 20, 1913.

MR. WM. E. COLBY,
Secretary Sierra Club,
San Francisco, California.

MY DEAR MR. COLBY: On October 30th last there were planted in the Yosemite Valley some 150 seedlings of Sequoia Washingtoniana (Gigantea). These had been secured for the purpose by Mr. Paul G. Redington, Supervisor of the Sierra National Forest, at the request of Major Wm. T. Littebrant, Acting Superintendent of the Yosemite National Park. In order to insure the success of the undertaking, Mr. Ernest G. Dudley, a forester, experienced in the rearing of young sequoias, was detailed to superintend the planting and advise as to suitable locations for the trees.

The scheme of planting, it should be understood, was by no means a haphazard one, a careful survey of the Valley having first been made with especial reference to soil, light, and other conditions for growth. Pains were taken, also, to avoid an arrangement that might interfere with the natural aspect of the Yosemite landscape. The plan finally adopted was that of a gracefully winding avenue, flanked by groups of sequoias. The road selected for the purpose was the one leading from Yosemite Village up the middle of the Valley floor to what is locally known as Kenneyville.

Nor shall it be said that no eye was had for the future—the very distant future, even—when the trees shall have attained a height of some 200 feet and measure twenty feet across at the base. In no place are the trees set less than eighty feet apart, while the width of the avenue is 104 feet throughout.

It occurred to the writer, for one thing, that a cluster of big trees about Le Conte Memorial Lodge would be especially appropriate and certain to be appreciated. The matter was laid before Major Littebrant, and he, with characteristic enthusiasm and promptness, at once directed Mr. Dudley to select six particularly fine specimens to be set about the Lodge.

At half-past four in the afternoon, a party composed of Major Littebrant, Mr. and Mrs. Dudley, Mrs. Matthes and the writer, met at the Le Conte Memorial Lodge and there together laid out a crescent about the building having a radius of about 100 feet. Mathematical exactness of symmetry was not deemed desirable in the scheme, but rather a selection of sites particularly promising for the healthy growth of the young trees. Accordingly, the distances between them are not uniform, but range from sixty to 100 feet.

Another locality in the Yosemite Valley that was specially favored with sequoia seedlings is the school house. The day following the planting at the Le Conte Memorial Lodge, two little sequoias were set out, one on each side of the school children's garden, in the presence of Miss Ora Boring, the teacher, and all the children. We may rest assured that these baby big trees will be well cared for.

Of the sequoia seedlings that were left over, several were planted along the edge of the woods on the south side of the Valley, from Yosemite Village southwestward, while at the road forks near Galen Clark's former residence, seven were set in a group. Further, by way of experiment, some handfuls of sequoia seed were planted at various places along the Pohono trail from Glacier Point westward. The localities in each case were selected by Mr. Dudley and marked so they may be easily recognized. A handful of seed also was taken by the writer to the Little Yosemite Valley and there divided among three spots that seemed particularly favorable. Each place was marked by a few stakes and a large ring of cobble stones. There is no certainty, of course, that any of this seed will germinate, yet the experiment seemed worth trying.

That sequoias will grow in the Yosemite Valley has already been abundantly demonstrated. The altitude of that locality, it is true, is some 2,000 feet lower than that of any of the neighboring big tree groves; yet the sequoias that have been planted in the Valley in previous years have done remarkably well. The three sequoias at the Sentinel Hotel, the four at the corner of Galen Clark's grave, and the solitary one on Pioneer Lamon's grave are growing up into fine, sturdy trees.

Another guarantee of the successful thriving of the sequoias is found in the presence of magnificent sugar pines in various parts of the Yosemite Valley. These trees, it is well known, require conditions very similar to those needed by the sequoias.

A singular fact, however, is connected with the sugar pine in the Yosemite Valley. On all my rambles through the Valley floor I have seen scarcely a single sugar pine seedling, nor even a young sugar pine still in its teens; yet the mature trees are in a flourishing condition and shed a multitude of cones. The explanation I would seek in the superabundance of squirrels in the Yosemite Valley—they do nor permit a single sugar pine seed to get into the ground. On a recent trip to Wawona, Major Littebrant and myself took occasion to contrast this condition in the Valley with what we saw along the road to Chinquapin. There, hundreds of sugar pine seedlings of various ages may be counted from a single point of view. Right then and there did the Major resolve to have a number of these little sugar pines transferred to the Yosemite Valley.

My last walk in the Valley shows me that he has carried out the plan. In various places along the road from Yosemite Village east to the Le Conte Memorial Lodge, and thence back along the road to the Stoneman bridge; also along the road west of the village, in the vicinity of Galen Clark's former residence and as far as Camp Ahwahnee, one may now see tiny sugar pines, each protected, like the infant sequoias, by three stakes driven into the ground.

Finally, need was found for shade trees along the straight, bleak stretches of road immediately west and north of the village. Here

rows of incense cedars were planted, hardy trees that seem to thrive under various conditions, and grow at a rapid rate. Thus it will be seen that a generous beginning has been made toward the beautifying of the Valley floor; a beginning which it is to be hoped will be followed up from year to year.

As the Major well points out, work of this sort really requires the services of an experienced forester, a man thoroughly familiar with the life of the forest, and withal, sensitive to the esthetic qualities of the landscape. It seems strange to reflect that no specialist of this type should ever have been among the employees of the Yosemite National Park, a reservation of more than 1100 square miles, whose main scenic asset lies in its magnificent forests (I, for one, would place these above its mountain sculpture). May the time come soon when the care of the trees in the Yosemite National Park will be deemed a matter of sufficient importance to justify the permanent appointment of a forestry expert to the Superintendent's staff. Had a forester been attached to the Park before this, we should probably not now be bewailing the loss of thousands of fine lodgepole pines through the ravages of insects. Nor would the Mariposa Grove of big trees, the most precious possession of the entire park, have been permitted to develop into an impassable wilderness, dense with thickets in which the seeds of the big trees choke and die. Fortunately, this place, too, has recently been taken in hand by Major Littebrant and has already in part been cleared out. But this, too, is forester's work and should have the supervision of a scientific forester.

And then there are knotty problems related with the large tracts of timber within the park that are owned by lumbermen. These tracts are likely to be slashed and burnt and ruined forever, unless they soon be exchanged, as has been proposed, for other tracts of equal economic but of relatively slight esthetic value. Matters of this sort clearly require the presence of a forester who shall give them the benefit of his special training.

Let us hope, therefore, that this tree planting episode we have just had in the Yosemite Valley may be productive of something besides a few handsome trees; that it may prove to be the first step toward the establishment of a definite system of forest care and improvement such as the situation logically calls for, and such as might well have formed part of the administrative routine of the Yosemite National Park from the first.

Very truly yours,
F. E. MATTHES.

PROTECT THE NATIVE PLANTS

Many attractive flowering plants, ferns, etc., in the neighborhood of towns and summer resorts, are in serious danger of local extermination, or reduction to relative rarity. This condition already exists in many places, and is much to be deplored, as it takes away one of the great charms of wood and field.

How may this danger be averted? Pick only a few flowers instead of a large quantity, thus giving an opportunity for seeds to develop and perpetuate the species. A few flowers skilfully arranged are much more attractive and decorative than masses bunched together. In picking flowers do not pull up the roots of plants. Avoid purchasing wild flowers in the streets and elsewhere, thus checking the incentive to collecting for sale, which in some cases has assumed very large proportions.

Much interest has developed in this matter and the Society for the Protection of Native Plants has been organized to do what it can for the cause through its membership and the publication of leaflets.

Membership in the Society is free to any one interested, and entitles one to receive all leaflets of the society as published. Any one subscribing one dollar a year or upward will be enrolled as a sustaining member. All applications, for membership or leaflets, should be addressed to the secretary,

MISS MARIA E. CARTER,
Boston Society of Natural History, Boston, Massachusetts.
ROBERT T. JACKSON,
President of Society for Protection of Native Plants.

THE CALIFORNIA
SCHOOL OF MECHANICAL ARTS
Founded by James Lick.
Sixteenth and Utah Streets

SAN FRANCISCO, Dec. 3, 1913.

MR. WM. E. COLBY, Sec., Sierra Club,
402 Mills Bldg., San Francisco.

DEAR SIR: We would like to present to the LeConte Lodge in the Yosemite Valley a pair of andirons. I visited the Lodge last summer and took measurements of its dimensions, and the andirons have been made to fit.

It may be that the Lodge will be closed throughout the winter, and if that is the case, we will keep them here until you are ready for them, but it seems best to notify you at this time, in order that you may not make plans for purchasing a set.

Yours very truly,
GEO. A. MERRILL, *Director.*

CONGRATULATORY VOTE AND MEMORANDUM OF THE SOCIÉTÉ PROTECTOIRE DES ANIMAUX DE PARIS (SOCIETY FOR THE PROTECTION OF ANIMALS), REGARDING THE ENACTMENT BY CONGRESS OF A LAW FOR THE EXCLUSION FROM THE UNITED STATES AND ITS DEPENDENCIES OF IMPORTATIONS OF WILD BIRDS' PLUMAGE FOR MILLINERY PURPOSES

(Translation.)

ASNIERES, SEINE, FRANCE, September 18, 1913.

At the monthly meeting of the Society for the Protection of Animals of Paris, held on September 18, 1913, Mons. A. F. Dupont read to the Society letters received by him from Mr. William T. Hornaday, Director of the New York Zoological Park. The Society listened to the statement made by Mr. Dupont of the energetic campaign prosecuted in the United States throughout the past six months, which ended on September 3rd in a complete victory for the protective societies, wherein those societies obtained from the American Senate the prohibition of the importation of wild birds' plumage, and the abolition of the traffic in feathers and skins of slaughtered wild birds, in the United States.

The Society requested the President to express its great satisfaction to the members of the protective societies for this great victory, and convey its heartfelt congratulations to the chief promoters of this world-wide success, i. e.:

First—To the New York Zoological Society and Mr. William T. Hornaday.

Second—To the National Association of Audubon Societies and Mr. T. Gilbert Pearson.

Third—To the New York Women's League for Animals.

Fourth—To the American Humane Association.

Fifth—To the Senators who by main force snatched the victory from defeat, particularly as follows: George P. McLean, George E. Chamberlain, Harry Lane, James A. O'Gorman, Gilbert M. Hitchcock, John Sharp Williams, Thomas P. Gore, Nathan P. Bryan, Augustus O. Bacon and Benjamin F. Shiveley.

The meeting hears the call made upon France by Mr. Hornaday for similar action, and relies upon the Paris Society for the Protection of Animals to begin at once a campaign to secure in France the same victory.

The meeting sends to the National Congress of the American Humane Association, to be held at Rochester, New York, on October 13th, an expression of its fraternal sympathy, and its hope that new victories may crown the labor of the Congress.

Action proposed, supported and obtained by

A. F. DUPONT,
Corresponding Member of the American Association.

NATIONAL PARKS

Extracts from Report of Superintendent of Yosemite National Park. (1913.)

Messrs. Miller and Sullivan, entomologists, Agricultural Department, were engaged during the late spring and summer months in investigating the life history of the pests (needle borer and bark beetle) which are destroying the tamarack pine (lodgepole, *Pinus contorta*) of the park. In order to best accomplish this, they were given a force of men and started work in the vicinity of Lake Tenaya.

It is found that all the "lodgepole" timber in Jack Main Cañon and Matterhorn Cañon and Cathedral Pass has been killed by the bark beetle.

The timber in Tilden, Stubblefield, Kerrick, Virginia, and Cold Cañons, Tuolumne Meadows, along McGee Lake Trail, as well as the regions of Benson Lake, Tenaya Creek, and Murphy Creek, is badly infested. A ranger has been instructed by these gentlemen and will continue the work begun by them in the effort to rid the park of the pest and save the timber. The ranger reports that 1,335 trees in the general vicinity of Lake Tenaya and McGee Lake Trail have been cut down and 1,250 of them burned in the efforts to conquer the infestation. This procedure must be continued until the bugs are destroyed, lest all of the lodgepole in the whole park be destroyed, after which the other and more valuable species will be attacked.

The land owned by the Yosemite Lumber Co., about 6,000 acres along the Wawona Road, is now being cruised by a party appointed by the Secretary of Agriculture. The purpose is to ascertain the value of the timber on this land with the view to making an exchange whereby this beautiful forest may be preserved intact to the park, giving therefor an equal value elsewhere within the park and national forest where the lumber company can as cheaply log and where the results of logging will not be visible to tourists on the road.

If the exchange can be made, not only will the tourist between here and Wawona, along the Wawona Road, be edified by the beauties of the sugar pine, but there will be preserved to the park a magnificent forest along Alder Creek, where eventually another road can be easily constructed. Failure to effect the exchange will result in both areas being logged and rendering it impossible for tourists to go from here to the Mariposa Grove without passing through miles of slash and devastation. In the transfer now being projected the lumber company agrees to transfer title to the acreage. This will extinguish their title and enable the Government to apply the principles of reforestation, so that future generations will reap the benefits of present forethought.

The small areas of land in the Merced and Tuolumne Groves of Big Trees which the Government owns are surrounded by patented lands, valuable only for their timber. There is considerable acreage of patented land lying in the western part of the park and, generally speaking, between the Big Oak Flat Road at the Tamarack Creek crossing and Hetch Hetchy in the area upon which the department has authorized grazing.

It is recommended that the timber in the "grazing area" referred to and on the acreage surrounding the big-tree groves referred to, be cruised and that an effort be made to effect an exchange to the end that the timber in the vicinity of the big trees be preserved. Incidentally, the difficulties heretofore encountered through private ownership of land in the western part of the park might be satisfactorily settled without the surrender of any park lands lying east of the eastern boundaries of the private holdings in that vicinity.

It is believed that the retention of the "grazing area" in the park is a necessity for the future enjoyment of the people. A road constructed through there will rival the beauties of the Wawona Road.

Log refuge cabins should be built near Merced Lake and Lake Tenaya for the accommodation of lost or belated tourists. These are needed especially for women who often come to the park alone and wander off without adequate knowledge of the trails.

Owing to the complaints that the trails were not well marked, about 173 signs of varying length, from 2 to 34 words, were painted and erected at necessary points on the ledge trails, as far as Hetch Hetchy and the Tioga Road on the north and Merced Lake on the east. Although these signs have been placed since July 1st, they have already begun to mysteriously disappear. From this experience, it is believed that metal signs, riveted to iron posts, securely embedded in the earth and rock will be less expensive and more enduring. There are many forks and crosses on the trails in the outlying parts of the park where it will be necessary to place guide signs to direct the travel which it is confidently hoped will increase each year.

There were a total of 13,735 visitors to the park during the period September 1, 1912, to October 31, 1913.

WM. T. LITTEBRANT,
Major, First Cavalry, U. S. Army,
Acting Superintendent Yosemite National Park.

EXTRACTS FROM REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK. (1913.)

Grand total of travel, season of 1913, 24,929.

A census of elk in and along the north line of the park was taken between April 9th and May 1st. The count showed 32,229, after having shipped 538, as noted below, making a total of 32,767, or an increase of 2,866 over the number found by the count of April, 1912.

During December, January, February and March, 538 elk were captured in the Park near the northern entrance and shipped for stocking public parks and ranges as follows: eighty to Kings County, Wash.; fifty to Yakima County, Wash.; forty to Garfield County, Wash.; fifty to Shasta County, Cal.; fifty to Pennsylvania for Clinton and Clearfield Counties; fifty to West Virginia; eighty to Arizona; twenty-five to Hot Springs, Va.; three to City Park, Aberdeen, S. Dak.; four to the City Park at Boston, Mass.; six to City Park at Spokane, Wash. One hundred were captured and shipped under direction of the Department of Agriculture, of which twenty-five went to Sundance, Wyo.; twenty-five to Estes Park, Colo.; twenty-five to Walla Walla, Wash.; and twenty-five to points in Utah. The cost of capture and loading on board the cars at Gardiner was $5 per head, which was paid by the States and parks receiving the elk. The loss in capturing and up to the time of delivery at their destination was but twenty-two animals out of 538 shipped. With plenty of grass, and the snow remaining soft so they could paw through it to get food, the elk, deer, antelope and mountain sheep wintered well and with but little loss.

Both black and grizzly bears are plentiful. Thirty-two grizzlies were noted at one time on the garbage dumps at the cañon on August 20th. During the summer it has been necessary to have five killed that had become dangerous to life and a menace to property. Attempts were made to save the robes for the National or other museums, but in only one instance was this attempt successful, owing to lack of immediate facilities for saving the skins in hot weather. The one saved was sent to the National Museum at Washington, D. C.

Bears have been captured and shipped alive for public parks as follows: October 25, 1912, a female grizzly to the Zoological Society of St. Louis, Mo.; July 31, 1913, a female grizzly with two cubs to the City Park at Atlanta, Ga.; September 14, 1913, a female grizzly to the park commissioners at Spokane, Wash.

These shipments were all made under department authority, at no expense to the Government.

LLOYD M. BRETT,
Lieutenant Colonel, First Cavalry,
Acting Superintendent.

EXTRACTS FROM REPORT OF THE SUPERINTENDENT OF THE MOUNT RAINIER NATIONAL PARK. (1913.)

The number of visitors reached the total of 13,501, as compared to a total of 8,946 for the season of 1912, a gain of 52 per cent.

The number of private automobile permits issued during the season of 1913 was 1,192, as compared to 674 issued in 1912, a gain of more than 76 per cent.

As a life-saving measure, a shelter should be erected at Camp Muir, (elevation, 10,000 feet). This point is on the principal route to the summit of Mount Rainier; $1,500 will provide a suitable building.

ETHAN ALLEN, *Superintendent.*

FORESTRY NOTES

WM. E. COLBY, Editor
WALTER L. HUBER, Assistant Editor

SCHOOL OF FORESTRY

In compliance with a long-felt need, the Regents have created a Department of Forestry at the University of California at Berkeley. To head the newly established department, they have secured Walter Mulford, now Professor of Forestry in Cornell University. Professor Mulford is claimed to be one of the best informed men in the United States on the subject of forestry.

To be associated with Professor Mulford, as Assistant Professor of Forestry, the Regents have appointed Merritt B. Pratt. Professor Pratt is at present Deputy Forest Supervisor in the United States Forest Service, and has had wide and varied practical experience in the scientific and practical administration of the forests of California. —*The California Alumni Weekly.*

SUMMER VACATIONS IN NATIONAL FORESTS

The number of persons who spend their summer vacations within the National Forests is growing so rapidly, says the Forest Service, that the question of providing suitable pasturage for their saddle and pack animals is becoming a problem. Campers naturally seek the spots where water is close at hand and where horse feed is abundant, in the hope that their stock will not be tempted to steal away in the night in search of more tempting pasturage. In order to provide such spots the Forest Service must set aside limited areas from which sheep and cattle are excluded.—*American Forestry.*

DU BOIS' SYSTEM OF FIRE PROTECTION

Coert du Bois, District Forester of the State of California, has worked out a wonderful system of forest fire protection in his territory. He describes one part of his organization as follows:

"On one of the heavily timbered forests in Northern California the district rangers have perfected volunteer forest fire organizations from among the residents of their districts—each volunteer company being assigned a definite area within which it is responsible. For each company there is one chief who receives forty cents an hour fighting time, one quartermaster and one packer, each paid thirty-five cents an hour, and from fifteen to thirty firemen who are paid thirty cents. Any additional men, not members of the volunteer crews, who are employed on a fire, are paid twenty-five cents an hour. At the beginning of the

fire season each member receives a circular letter from the district ranger telling him the names, addresses and officers of his company and the boundary of its fire division, the number of pack horses and saddle horses available at each ranch, the duties of each member on report of a fire, the rates of pay for labor, horses and teams, the location of tool and grub caches, a brief résumé of the district fire plan and a statement of the objects of the organization and the bearing of fire protection on local interests. As the men selected are all small local ranchers and are all connected on farmer phone lines, these organizations have worked almost automatically. Although twenty or more fires have occurred in the area covered by these volunteer companies, we have never had an opportunity to see how they work in a bad fire because they have never let one get bad.

"In sparsely settled localities, highly-organized volunteer help is out of the question, of course. We are meeting such conditions with what we call the stationary patrol. During the peak of the fire season as large a number of short-term forest guards are employed as can be squeezed out of the forest allotment. These are stationed at centers of accessibility throughout the ranger district and in every case at a phone. They are given strict orders not to get out of ear-shot of the phone bell and never to leave their stations except under orders from the district ranger. Each station is fully equipped with tools and kept provisioned for two weeks ahead. The entire district is commanded by lookouts, who are in communication with the district ranger.

"A lookout locates a fire. He reports it to the district ranger, giving its size, exact whereabouts and the speed with which it is spreading. The district ranger telephones one or generally two of the nearest guards, who start immediately with two days' grub on their saddles. The ranger then organizes a crew and a commissary to follow the guards and holds them until the lookout, who is watching the progress of the fire, advises him to forward the reserves. In a remarkably large number of instances the first detachment controlled the fire. In one instance where it did not, the excellent team work on the part of lookout, ranger, guards and a hastily drafted volunteer crew put twenty-five men on a fire line far back in an inaccessible gulch six hours and a half after the first smoke raised, or at midnight. The fire was under control by daylight, and when the men had eaten breakfast they finished the last of the supplies that went out with the crew. The pack train, with a reserve of grub, sent out by the ranger immediately after the men had started, arrived before dinner."—*American Forestry.*

WORK FOR 1914

There must be better protection against forest fires, a more vigorous campaign against tree-destroying insects and disease; far-reaching educational work, including teaching school children the value of forests, and proper forest laws must be passed in several States where there is now no adequate protection.—*American Forestry Association.*

TIMBER EXCHANGES—NATIONAL PARKS

Forest Service timber lands are so intermingled with private holdings throughout a number of the Sierra forests as to make the administration of both private and National Forest land unnecessarily difficult and expensive. The Yosemite Lumber Company, of Merced Falls; the Hume-Bennett Lumber Company, of Sanger, and the Madera Sugar Pine Company, of Madera, are at present negotiating with District Forester DuBois for timber land exchanges which, if made, will result in the consolidation of the holdings of both parties and in the preservation of scenic timber areas.

The lands which the Yosemite Lumber Company propose to exchange are situated along the beautiful Wawona road which leads into the Yosemite National Park from the south. The exchange, if effected, will preserve all of the timber along this road, which would ordinarily be cut by the lumber company, making it very unsightly.

The area which the Hume-Bennett Lumber Company propose to exchange contains valuable big tree timber along the route into the Kings River Cañon, which should be preserved for the people.

The Madera Sugar Pine Company offers to exchange land in the vicinity of Signal Peak, near Wawona. This area has great scenic beauty and is now visited by a good many people in the summer season from the Wawona Hotel.

It will be necessary for Congress to pass enabling Acts before any of these exchanges can be made.

FOREST FIRE STATISTICS

Fred G. Plumber, of the Forest Service, who is gathering statistics of this year's fires, says of the work of the Forestry Service:

"The forest ranger service has reduced the loss through fire by seventy-five per cent; it has accomplished this within the past few years. The fire loss, however, is still appalling. It amounts to about 30,000,000,000 feet a year. That is an amount equal to the annual growth. That one fact is sufficient to emphasize the seriousness of the situation.

"The forest rangers are about the finest body of young men in the world. There are 3,600 of them, and each is in love with his work. He is willing to undergo any sort of hardship and take any conceivable risk to perform his duties.

"The efficiency of this department is being increased constantly, but it alone cannot solve the problem. A number of the Forest States have rendered material assistance in the enactment of stringent laws for the protection of timber and future legislation will doubtless attain the end desired.

"The worst foe we have to deal with is the forest incendiary. Most of the fire losses are due to the work of men who deliberately set fire to the timber in order to clear the land. Cattlemen have been frequently charged with the responsibility for these crimes."—*American Forestry.*

BOOK REVIEWS

Edited By MARION RANDALL PARSONS

"THE ROMANCE OF THE NEWFOUNDLAND CARIBOU"*

In these days of diminishing wild life, it is encouraging to find the study of living animals to some extent replacing the destructive zeal of the collector of specimens. However necessary the latter may be for scientific study, he deplorably helps to thin the ranks of our already scarce wild creatures. And the scarcer the creature the more his skin is coveted. That the study of living wild animals by means of photographs taken in their natural surroundings may be as absorbing a pursuit as killing them is well shown in Mr. Dugmore's stirring story of the life history of the Newfoundland caribou. Mr. Dugmore traveled into the wilderness alone and secured with his camera more trophies than the most ambitous collector could ever hope for. Literally hundreds of the noble animals are pictured in every phase of their natural daily life.

A brief sketch of the topography of Newfoundland gives an excellent idea of the physical conditions of the caribou's habitat. The caribou's year Mr. Dugmore divides into four periods, which correspond with the seasons. The summer season, beginning in June, when the caribou bring forth their young, is chosen as the starting-point. Mr. Dugmore tells how the doe dwells alone in the forests of fir and spruce at this period, "avoiding her own kind even as she avoids man. . . . During the warmer months the caribou are more or less solitary in habit, going about singly or in pairs and only rarely in small herds."

During the second period, which includes the mating season and the southerly migration, the animals reach their finest development. The horns of the stag are fully grown, the does are fat and the fawns well grown and strong. Some remarkable photographs were secured at this time, notably one of two fighting stags. The account of the long day spent in stalking a herd before this picture was secured is a well-sustained bit of narrative quite as exciting to the reader as if the stags were to be shot with bullets instead of with the camera. The southerly migration usually begins the latter part of October. Mr. Dugmore has obtained some splendid pictures of herds on the march, nearly all of them led by the more watchful does.

The third period is the time of "desolation and suffering, when Nature, in her stern way, thins out the weaklings. . . . The gates close behind

* *The Romance of the Newfoundland Caribou.* By A. A. RADCLYFFE DUGMORE, F. R. G. S. J. B. Lippincott Co., London and Philadelphia, 1913. Illustrated with paintings, drawings and photographs from life by the author. 191 pages, Price, $3.75 net.

the traveling herds, lakes and rivers are frozen. . . . As the winter continues the snow lies deeper, . . . making the life of the wild a hard and terrible fight, from which only the strongest and cleverest emerge. . . . The fourth period . . . is the season of hopefulness and promise. The caribou become restless, the large herds break up, and in ones and twos the does begin the long return journey to their summer homes in the north. The stags . . . follow along in small herds. . . . There is no great rush of animals, but a slow and scattered moving of the survivors of the herds which hurried southward six or seven months before."

Chapters on camp outfit and methods of hunting will appeal to the sportsman, but the value of the book is the study it presents of the living animal. This has a lasting importance, and it is to be hoped that many others will follow Mr. Dugmore's example and help to preserve some record of our fast-vanishing wild life. M. R. P.

"THE CANOE AND THE SADDLE"* More than fifty years ago this story of a journey by canoe and saddle from Port Townsend on Puget Sound to The Dalles on the Columbia River appeared before the American public. Although for many years it was out of print, it has now been re-issued in attractive form by John H. Williams of Tacoma. Some new material is added in the shape of letters and journals dealing with Winthrop's trip to the Pacific Coast in the summer of 1853. The editor's scholarly annotations lend clearness and add interest for the modern reader unfamiliar with the early history of the Northwest. The numerous illustrations from photographs, the color prints, the clear type and handsome binding make a setting worthy of the book's place in American literature.

The manuscript was originally published in 1862, a year after the author's early death on a battlefield of the Civil War. It is a spirited narrative, full of youthful enthusiasm and a keen delight in the various aspects of pioneer life. While Winthrop, like his better-known contemporary, Bayard Taylor, was a traveler whose European experience gave breadth to his impressions of the primitive West, he has left us a picture rather than a study of pioneer days. His language is forceful and vivid, his scenes full of color. He did not stand aloof and comment on new conditions, as Taylor did, but plunged joyously headlong into the life as he found it. He has drawn and preserved for us a wonderful picture of the times; he has caught the very spirit of the frontier.

The beauty of the Cascade Mountains made a profound impression on Winthrop. His descriptions of their forests and meadows and of the shadowed glaciers of Mt. Rainier are very fine. His delight in the life of the trail is constantly expressed. The camp-fires, the "feasts cooked

* *The Canoe and the Saddle.* By THEODORE WINTHROP. Edited with an introduction and notes by John H. Williams. Published by John H. Williams, Tacoma, 1913. With sixteen colored plates and more than one hundred other illustrations. 332 pages. Price, $5.00 net. By express, 30 cents extra.

under the greenwood tree," the long nooning under the shadow of a fir in the green meadows of Naches Pass—every incident of camp and trail has for him unfailing charm. Less sympathetic is his attitude toward his Indian guides and acquaintances. He found them drunken, debased, treacherous creatures, it is true, but in his ridicule of their forlorn condition there is both unconscious cruelty and a hint of the underlying hostility between white men and red that several years later broke out into open warfare. The book is interesting alike to the mountaineer and to the lover of the early history of the Pacific Coast.

M. R. P.

"PICTURESQUE NEW ZEALAND"*

For him who likes to travel, there cannot be a more delightful journey than the one taken in company with Mr. Paul Gooding in his book entitled "Picturesque New Zealand."

Through an interpretation of a government, we can often better understand a people. Hence at the beginning we are shown the progressiveness of the democratic government, the reformatory laws, the excellent pension system of widows and old people in this Utopia of modern governments. One learns of the climate that it closely resembles that of Italy, that it rains only in the night, that the tides are the highest and the death-rate the lowest of any country in the world.

One can guess some of the interest contained in the chapters on the flora and fauna, when I say that there are one thousand four hundred different flowering plants, of which two-thirds are not seen outside of New Zealand. In one acre of forest land there are often forty or fifty different species of trees and shrubs. And the account is as remarkable zoologically as botanically, only in a negative sense. There are but few mammalia. The birds are most weird creatures, which cannot fly. There are absolutely no snakes, and but one species of spider. Mystery surrounds all attempts to decide why there are no kangaroos and other representatives of Australasia, since fossils and shells prove that long ago the islands were very closely connected.

By far the most fascinating parts of the book are those which describe the hot rivers, springs and geysers of the North Island and the fjords, glaciers and snow-capped peaks of the South Island.

Interspersed with descriptions and adventures are everywhere myths of the early Maori civilization. From the photographs of Maori buildings and carvings, one is reminded of the Alaskan Indians and their totem poles. Among the natives, many of the primitive customs yet remain, not the least amazing of which is the *hongi* or nose salutation, by means of which two natives greet or console each other in times of joy or sadness.

L. M. R.

---

* *Picturesque New Zealand.* By PAUL GOODING. Houghton, Mifflin & Co., Cambridge, 1913. 332 pages, maps and photographs by Muir and Moodie and Josiah Martin. Price, $3.50 net.

"THE CAROLINA MOUNTAINS"* What a charming companion Margaret Morley must be in the wilderness! In her "Carolina Mountains," with its lovely photographic reproductions, one feels her sympathetic love for all that is beautiful in Nature. The reader, also, is inspired with the romantic suggestion of the enchanted East, as he views the magnolia and tulip-trees in full flower in the forest and catches the magic spice of plants whose only other habitat outside of the southern mountains is in eastern Asia. We see with her the blood-red mud staining the legs of the snow-white mules, the red wasp nests and the fiery red rivers running by, laden with their sediment of red soil. We enjoy the encounters with the furred and feathered beasts. We laugh at the rage of the ruffed grouse whose anger is "one mass of irate feathers on end."

The villages are picturesque with their gaily painted houses, of which no two are arranged at the same angle. The people are a quaint survival of that simple civilization when man was content to live on the products of his own land. Many of them have never been more than ten miles from home. They have never been in a train nor even seen an automobile. Their language is so old-fashioned that it more nearly resembles that of Chaucer than the breezy modern English, so full of foreign influence. The children always call flowers "pretties." The fork of a river is more correctly called a "prong." One refers to "yon-side" of the mountain. So simple and natural and hospitable are these naive, trusting people that we are almost tempted to regret the purchase of an enormous territory by one of the Vanderbilts and the establishment of model industries.

About 18,500 acres in North Carolina, in the vicinity of Mt. Mitchell (the highest mountain in the United States east of the Mississippi) have already been bought by the government as a national pleasure-ground, while further purchases are under consideration. And so future generations will continue to enjoy what is rightfully theirs in this "enchanting Holiday of Dreams." L. M. R.

"AFRICAN CAMP FIRES"† British East Africa is the scene of "African Camp Fires," an absorbing book of hunting and camp experiences. From Mombasa, Mr. White followed the railroad northwestward to Nairobi, where he outfitted for his journeys into the wilderness. The trips were often arduous. Long treks across sandy, waterless wastes or steep hill-climbing through almost impenetrable brush were stern tests of endurance under the tropic sun. Camp life was made easy, even luxurious, however, by the small army of native guides, porters and servants which accompanied him. Lion-

* *The Carolina Mountains.* By MARGARET W. MORLEY. Houghton, Mifflin & Co., Cambridge, 1913. 397 pages. Illustrated with photographs by the author and maps. Price, $3.50 net.

† *African Camp Fires.* By STEWART EDWARD WHITE. Doubleday, Page & Co., New York, 1913. Illustrated from photographs. 378 pages. Price, $1.50 net.

hunting on the Kapiti Plains forms the subject of several spirited chapters. Many strange animals were shot; the sable, the fringe-eared oryx, the lesser and greater kudu. The taking of the latter was a remarkable and noteworthy achievement. A fine photograph was obtained of a living bushbuck. Very interesting are the descriptions of the natives, their costumes, adornments, etc. Mr. White has a happy faculty of giving clear and vivid snapshots of things and people. No incident that can add a touch of color to his picture is forgotten. The book will undoubtedly be as popular as the many other widely read out-door books already to Mr. White's credit. M. R. P.

"WINTER SPORTS IN SWITZERLAND"* During the last decade Switzerland has made the discovery that the tourist crop may be harvested twice a year. Scores of villages that formerly slept through the long winter now are awakened into activity and prosperity with the coming of the snow. New hotels are erected every year; railroads are extended, and the construction of artificial rinks for curling, ice-hockey and skating, and of courses for toboggans and bobsleighs has become a science. Mr. Benson's splendid book, "Winter Sports in Switzerland," gives a stirring picture of the present winter life, and touches but lightly on the history of its development. We hear, incidentally, however, how John Addington Symonds constructed the first rink by the energetic manipulation of a pump handle, and how only six or seven years ago the first skating rink at Villars consisted of one flooded lawn-tennis court which boasted an average patronage of three skaters. To-day the rinks at Villars cover acres of ground, where each day hundreds of skaters enjoy this fascinating sport.

It is seldom that a book which contains so much detailed information of a technical nature is written with such literary skill. Mr. Benson is not only master of an easy and brisk, yet finished style, but most successfully reflects the holiday spirit. Any one who has ever ventured upon skis will greatly enjoy the chapters on this most entrancing sport, and remember how his own skis were "lovingly entwined together" on the occasion of his first fall. The chapter on winter resorts gives many valuable hints concerning the localities whose climatic conditions render them most suitable for the different sports. Skating, curling, tobogganing and other sports are described in detail, and advice given concerning suitable clothing, boots, etc.

The make-up of the book is uncommonly attractive. The series of lake photographs showing the growth of "ice flowers" is specially worthy of praise. The photographs and color prints of the various sports inspire one with an immediate and overwhelming desire to go and do likewise. M. R. P.

---

* *Winter Sports in Switzerland*. By E. F. BENSON. Dodd, Mead & Co., New York. With 12 full-page illustrations in color by C. Fleming Williams, and 47 reproductions from photographs by Mrs. Aubrey Le Blond. 197 pages. Price, $4.00 net. Postage, 25 cents extra.

"Travels in the Pyrenees"* In an interesting volume divided into twelve books, V. C. Scott O'Connor, the author of several books on the Far East, has given impressions of that little known and little written about country of the Eastern Pyrenees, including both the Pyrenees of France and of Spain. It is refreshing to renew our historical knowledge of a country so saturated with associations of Roman history from Hannibal's time, and on through the Middle Ages. The author is a member of the French Alpine Club. A great love and admiration for Mount Canigou, the predominating peak of this region, are reflected in his book. Far from being a mountaineering book, however, it is rather a jotting down of impressions of dim old cathedrals or graceful Catalan maidens in their native dances. Two beautiful colored cuts of paintings, one of Mount Canigou, and excellent photographs on almost every page, add greatly to the interest of the book and help to give us the feeling of contrast between Spain, the easy-going and picturesque, the country of the clerical school, the bad roads and the mule, and France with its admirable system of education, its efficient postoffice, electric trains and great highways. To have such places as the Republic of Andora and Puigcerda made accessible by railroads, as the author says they soon will be, ought to bring to the Spanish new incentive and interest in life. L. F. O'C.

"Club Alpino Italiano"† The Italian Alpine Club, organized in 1863, celebrated its fiftieth anniversary during the past year. The directorate has happily signalized the event by publishing a quarto volume of 282 pages in which the achievements of the Club during that period are portrayed with picture and pen. Being printed on heavy glazed paper, the numerous beautiful illustrations are very effective. It is interesting to meet, in the earlier chapters, fine portraits of some of the famous Italian guides, like Jean Antoine Carrel. Chapters dealing with special activities of the Club have been written by men who possess special fitness for the task. There is, for instance, a chapter on Nomenclature (Toponomastica), and Hypsometry. Another deals with the botanical and geological studies which were carried on under the auspices of the Club. One deals with "The Development of Alpinism without a Guide in Italy." It may prove suggestive to members of the Sierra Club to note how extremely varied the activities are to which the membership of this club has devoted itself. Winter sports, meteorology, museum expositions of alpine flora and fauna, the establishment of refuges and building of trails, painting and photography of alpine scenery, reforestation—all these interests have their devotees in various sections of the Italian Alpine Club. We congratulate our sister club on the fine record of its achievements.

W. F. B.

**Travels in the Pyrenees.* By V. C. Scott O'Connor. Dodd, Mead & Co., New York. With four colored plates and 158 other illustrations and a map. 348 pages. Price $3.00 net.

†*L'Opera del Club Alpino Italiano, nel primo suo cinquantennio.* Torino, 1913.

"THE INFLUENCE OF THE COLLEGE SPIRIT ON PRACTICAL PROBLEMS"* Our energetic fellow member, Ford Ashman Carpenter, has just published another little volume which is packed full of sprightly wisdom and suggestive thought. Its contents were prepared as a baccalaureate address for Whittier College, which bestowed upon him the degree of LL. D. He discusses particularly the personal qualities of reliability and efficiency which win recognition in all walks of life. The author is a keen observer and has drawn his illustrations from many fields of human thought and endeavor. The book is especially to be recommended to those who are inclined to disparage the value of a college education. It has the ring of sane enthusiasm for high ideals, and ought to do something to recruit the ranks of those who devote their lives to efficient service of the commonwealth.

W. F. B.

"MAZAMA"† The new issue of the bulletin of the Mazama Club contains many articles of interest. The 1912 and 1913 outings on Mt. Hood and Mt. Adams are chronicled by Beatrice Young. Professor W. D. Lyman writes of "Indian Myths of Mt. Adams"; the club's president, Mr. H. H. Prouty, contributes "A Climb on Mt. Robson," and Mr. John A. Lee tells of the "Mountaineer Outing in the Olympics." Other interesting papers are by Dr. J. H. Huddleson, Jr., Walter Scott McBride and Dr. C. Barck. M. R. P.

"THE MOUNTAINEER"‡ The Second Olympic Number of the *Mountaineer* is devoted mainly to this little-known range, though articles on "The Dolomites," by A. H. Albertson, and "The Ascent of Whitehorse," by S. V. Bryant, also appear. The 1913 outing is fully chronicled by Gertrude Streator. Professor E. S. Meany, the president of the Mountaineers, contributes a poem and an article on "The Olympics in History and Legend." R. L. Fromme writes of "The Olympic National Forests." Hugh Elmer Brown, J. H. Weer, Winona Bailey, M. R. Parsons, and Hazel Burroughs contribute. M. R. P.

The January, 1914, issue of *Outing* contains several very interesting articles on winter sports in America. Most significant is the story of the Outing Club of Dartmouth College. In three years it has grown from a handful of snowshoe and ski runners to a "whole college on the trail," and its "Winter Carnival" has become as settled a feature of the college activities as the "Junior Prom." "How to Snow-Shoe" is an article that should be particularly welcome to many of our Club members just at present. M. R. P.

**The Influence of the College Spirit on Practical Problems.* By FORD ASHMAN CARPENTER, LL.D. Mt. Pleasant Press, Harrisburg. 1913.

†*Mazama.* Vol. IV, No. 2, December, 1913. Published by the Mazamas, Portland, Oregon.

‡*The Mountaineer.* Second Olympic Number, Vol. VI, 1913. Published by The Mountaineers, Seattle, Washington. Price, 50 cents.